

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 5,8h  
2. Edition

En

VA 6/100 H 1250 CR 87  
0 460 306 193

supersedes 8.74  
company IHC  
engine D 358

Supplement plunger lift 1.0 mm referenced  
to outlet "A".

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting mm

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	3,1-4,1 mm		
1.2 Supply pump pressure	900	4,6-5,1 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	69,0-70,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	270	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind. 90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	16,0-24,0 cm <sup>3</sup> /1000 strokes		

Testoil-ISO 4113

2. Test Specifications		Checking values in brackets				
2.1 Timing device	rev/min mm	Start 370-520(340-550) 0,7-1,7(0,4-2,1)	600 (2,8-4,4)	900 4,2-5,2(3,9-5,5)	1050 5,2-5,9(4,9-6,2)	1070-1220
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200	900			1250
		1,1-1,6(0,9-1,8)		(4,4-5,3)	5,7-6,2(5,5-6,4)	
Overflow delivery	rev/min cm <sup>3</sup> /10s	500 55-100(40-110)				1250 55-100(40-110)

#### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1230-1380 (1310-1400) 1300 1200-1240 1180 800 500	0 (15,0-25,0) Start 62,5-65,5 (61,5-66,5) (67,5-70,5) 67,0-70,0 (66,0-71,0)	
	Stop	1250	0	
Idle stop	Full	360-410 (340-430) 270	0 (11,0-19,0)	
End stop	Start	100 220-320	mind. 90,0	

Angle to the stop-plate	Pre-setting dimensions
Pump = $25 \pm 4^\circ$	Pump
$\alpha = 55 \pm 8^\circ$	Dimension IV = 2,2 mm
$\beta = 30 - 8^\circ$	Dimension V = 24,6 mm
$\gamma = 60 + 8^\circ$	
$\delta$	

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

## Fuel Injection Pump

46

WPP 001/4 DEE 2,5e 2

1. Edition

VA 3/100 H 1000 BR 28-2

En

supersedes  
company  
engine

John Deere  
493 B

Setting of pointer with plunger lift 1.72 mm referenced to outlet "A" in line with TDC position of corresponding engine cylinder

Pre-stroke setting 0,3 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	600	6,9-7,9 mm		
1.2 Supply pump pressure	600	5,1-5,6 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	48,5-49,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	400	9,0-15,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	--	-- cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1060	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min	100-260(70-290)	600	790-940
	mm	Start	(6,6-8,2)	9,7-10,4(9,4-10,7)
2.2 Supply pump	rev/min	100	600	1000
	kp/cm <sup>2</sup>	1,7-2,2(1,5-2,4)	(4,9-5,8)	6,2-6,7(6,0-6,9)
Overflow delivery	rev/min	500	1000	
	cm <sup>3</sup> /10s	mind. 25,0	55-125(40-140)	

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1120-1210 (1100-1230)	0	
		1160	max. 3,0	
		1060	(25,0-35,0)	
		1000	(48,0-50,0)	
		500	41,5-45,5 (40,5-46,5)	
		100	mind. 32,5	
	Stop	1000	0	
Idle stop	Full	470-530 (450-550)	0	
		400	(8,0-16,0)	
	Start	--	--	
End stop				

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Angle to the stop-plate	Pre-setting dimensions
Pump = $25 \pm 4^\circ$	Pump
$\alpha = 30 \pm 8^\circ$	Dimension IV = 3,0 mm
$\beta = 30 - 8^\circ$	Dimension V = - mm
$\gamma = 60 + 8^\circ$	Dimension I = 7,0 mm
	Dimension II = 10,5 mm
	Dimension III = 26,8 mm

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

En

46

WPP 001/4 HAN 2,3d 1

1. Edition

VA 3/100 H 1200 BR 52-3

supersedes

company

Hanomag  
D 131

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	3,5-4,5 mm		
1.2 Supply pump pressure	900	4,9-5,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	46,5-49,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	10,0-16,0 cm <sup>3</sup> /1000 strokes		
1.5 Start (mech)	100	mind. 65,0 cm <sup>3</sup> /1000 strokes		3,0
1.6 Full-load speed regulation	1350	28,5-36,5 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min	520-670(490-700)	900	1000-1150
	mm	Start	(3,2-4,8)	5,7-6,4(5,4-6,7)
2.2 Supply pump	rev/min	100	900	1300
	kp/cm <sup>2</sup>	1,4-1,9(1,2-2,1)	(4,7-5,6)	6,1-6,6(5,9-6,8)
Overflow delivery	rev/min	500	1000	
	cm <sup>3</sup> /10 s	mind. 25	55-125(40-140)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>6</sup>
End stop	Full	1390-1450 (1370-1470)	0	
		1350	(27,5-37,5)	
		1250	48,0-51,0 (47,0-52,0)	
		1100	(48,0-50,0)	
		500	44,0-47,5 (43,5-48,5)	
	Stop	1300	0	
Idle stop	Full	380-430 (360-450)	0	
		300	(9,0-17,0)	
	Start	100	mind. 65,0	
End stop		mind. 150		

Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 5,5 mm</p> <p>Dimension V = - mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

En

46

WPP 001/4 HAN 2,3c

3. Edition

VA 3/100 H 1500 BR 129-4  
0 460 303 088

supersedes  
company  
engine

6.70  
Hanomag  
D 132 W

Setting of the pointer at a stroke of 1,12 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings		rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1	Timing device	1000	6,0-7,0 mm		
1.2	Supply pump pressure	1000	4,7-5,2 kp/cm <sup>2</sup>		
1.3	Full-load delivery without charge-air pressure	1200	58,5-59,5 cm <sup>3</sup> /1000 strokes		2,5
	Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4	Idle speed regulation	300	10,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5	Start	100	mind.60,0 cm <sup>3</sup> /9000 strokes		
1.6	Full-load speed regulation	1580	16,0-24,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1	Timing device	rev/min	510-640(480-670)	1000 1260-1400
		mm	Start (5,7-7,3)	9,7-10,4(9,4-10,7)
2.2	Supply pump	rev/min	100	1000 1500
		kp/cm <sup>2</sup>	0,7-1,2(0,5-1,4)	(4,5-5,4) 6,1-6,6(5,9-6,8)
	Overflow delivery	rev/min	500	1500
		cm <sup>3</sup> /10 s	mind.25	85-155(70-170)

2.3 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1610-1660 (1590-1680)	0	
		1580	(15,0-25,0)	
		1450	59,0-62,0 (58,0-63,0)	
		1200	(58,0-60,0)	
		500	53,0-56,0 (52,0-57,0)	
	Stop	1500	0	
Idle stop	Full	340-440 (360-460)	0	
		300	(9,0-14,0)	
		100	mind.60,0	
End stop	Start	300-550		

Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 0,5 mm BMP 161/32</p> <p>Dimension V = --- mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 HAN 3,1 e 1

1. Edition

En

VA 6/100 H 1300 BR 54-2

supersedes  
company  
engine.  
Hanomag  
D 161 R-75 PS

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,1 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	3,4-4,4 mm		
1.2 Supply pump pressure	1100	5,3-5,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	47,5-48,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	12,0-18,0 cm <sup>3</sup> /1000 strokes		
1.5 Start (mech.)	100	mind. 65,0 cm <sup>3</sup> /1000 strokes		3,0
1.6 Full-load speed regulation	1390	26,0-34,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min	520-670 (490-700)	1000	1120-1240
	mm	Start	(3,1-4,7)	4,7-5,4(4,4-5,7)
2.2 Supply pump	rev/min	100	1100	1300
	kp/cm <sup>2</sup>	1,0-1,5(0,8-1,7)	(5,1-6,0)	5,9-6,4(5,7-6,6)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 mind. 25	1000 55-125(40-140)	

2.3 Fuel deliveries	Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop		Full	1430-1480 (1410-1500)	0 1390 (25,0-35,0) 1300 (46,5-49,5) 1100 (45,5-50,5) 500 (47,0-49,0)	
		Stop	1300	0 43,5-46,5 (42,5-47,5)	
Idle stop	Full		380-450 (360-470)	0 (11,0-19,0)	
End stop	Start		300 100 500	mind. 65,0 mind. 25,0	

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 6,0 mm</p> <p>Dimension V = - mm</p>

**Testoil-ISO 4113**

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 HAN 3,1e

2. Edition

En

VA 4/100 H 1300 BR 53-2

supersedes 6.69  
company Hanomag  
engine D 142 K

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,1 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	5,0-6,0 mm		
1.2 Supply pump pressure	1100	4,8-5,3 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	57,0-58,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	10,0-16,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start (mech.)	100	mind. 75,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1350	31,0-39,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	560-720(530-750)	1100	1160-1300
	Start		(4,7-6,3)	6,7-7,4(6,4-7,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100	1100	1300
		0,7-1,2(0,5-1,4)	(4,6-5,5)	5,3-5,8(5,1-6,0)
Overflow delivery	rev/min cm <sup>3</sup> /10s	500	1000	
		mind. 25	55-125(40-140)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1430-1490 (1410-1510)	0	
		1350	57,5-60,0 (30,0-40,0)	
		1250	(56,5-61,5)	
		1100	(56,5-58,5)	
		500	53,5-56,5 (52,5-57,5)	
	Stop	1300	0	
Idle stop	Full	450-510 (430-530)	0	
		350	(9,0-17,0)	
	Start	100	mind. 75,0	
		500	mind. 25,0	
End stop		mind. 150		

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A15

BOSCH

Geschäftsbericht KH. Kundendienst. Kfz-Ausrüstung.  
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Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 4,0 mm</p> <p>Dimension V = - mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 HAN 3,1b

3. Edition

En

VA 4/100 H 1300 BR 137

0 460 304 075

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

supersedes 4.69  
company Hanomag  
engine D 141 R

Pre-stroke setting 0.1 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	5,0-6,0 mm		
1.2 Supply pump pressure	1100	4,8-5,3 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	49,5-50,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	320	17,0-23,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 75,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1400	22,0-28,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets				
2.1 Timing device	rev/min	560-720(530-750)	1100	1160-1300
	mm	Start	(4,7-6,3)	6,7-7,4(6,4-7,7)
2.2 Supply pump	rev/min	100	1100	1300
	kp/cm <sup>2</sup>	0,5-1,0(0,3-1,2)	(4,6-5,5)	5,4-5,9(5,2-6,1)
Overflow delivery	rev/min	500		1000
	cm <sup>3</sup> /10 s	mind. 25		55-125(40-140)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1480-1540 (1460-1560)	0	
		1400	(21,0-29,0)	
		1300	47,5-50,5 (46,5-51,5)	
		1100	(49,0-51,0)	
		500	49,0-52,0 (48,0-53,0)	
	Stop	1300	0	
Idle stop	Full	450-510 (430-530)	0	
		320	(16,0-24,0)	
		100	mind. 75,0	
End stop	Start	300-550		

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A17

BOSCH

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A 17

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = - mm</p> <p>Dimension V = - mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 HAN 3,1b 1

1. Edition

En

VA 4/100 H 1500 BR 137-2  
0 460 304 095

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes  
company: Hanomag  
engine: D 142 W

Pre-stroke setting 0,1 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	5,0-6,0 mm		
1.2 Supply pump pressure	1100	4,8-5,3 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1200	54,5-55,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	320	17,0-23,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind. 75,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1600	21,0-29,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min mm	630-770(610-790)	1100	1350-1470
		Start	(4,7-6,3)	8,7-9,4(8,4-9,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100	1000	1500
		0,6-1,1(0,4-1,3)	(4,6-5,5)	5,9-6,4(5,7-6,6)
Overflow delivery	rev/min cm <sup>3</sup> /10s	500		1500
		mind. 25		85-125(70-140)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1650-1710 (1630-1730)	0	
		1600	(20,0-30,0)	
		1450	52,5-55,5 (51,5-56,5)	
		1200	(54,0-56,0)	
		600	52,0-55,0 (51,0-56,0)	
	Stop	1500	0	
Idle stop	Full	450-510 (430-530)	0	
		320	(16,0-24,0)	
		100	mind. 75,0	
End stop	Start	300-550		

Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>c = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = - mm</p> <p>Dimension V = - mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 HAN 4,2a

3. Edition

VA 6/100 H 1300 BR 54

En

supersedes 4,69  
company Hanomag  
engine D 161 R

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	3,4-4,4 mm		
1.2 Supply pump pressure	1000	4,6-5,1 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	41,5-42,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	10,0-16,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start (autom.)	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1360	21,0-29,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	520-670(490-700)	1000	1220-1240
		Start	(3,1-4,7)	4,7-5,4(4,4-5,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100	1000	1300
		0,8-1,3(0,6-1,5)	(4,4-5,3)	5,6-6,1(5,4-6,3)
Overflow delivery	rev/min cm <sup>3</sup> /10s	500	1000	
		mind.25	55-125(40-140)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1400-1450 (1380-1470)	0	
		1360	(20,0-30,0)	
		1280	41,5-44,5 (40,5-45,5)	
		1100	(41,0-43,0)	
		500	36,5-39,5 (35,5-40,5)	
	Stop	1300	0	
Idle stop	Full	360-420 (340-440)	0	
		300	(9,0-17,0)	
		100	mind.65,0	
		500	max. 30,0	
End stop	Start			

Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
<b>Pump</b>	
$\alpha$ = 25 $\pm$ 4°	Pump = 5,5 mm
$\beta$ = 40 $\pm$ 8°	Dimension IV = - mm
$\gamma$ = 30 - 8°	Dimension I **
$\delta$ = 60 $\pm$ 8°	Dimension II **

\*\* According to the wear-parts list (BR)

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 HAN 2,3 b

2. Edition

En

VA 3/1000 H 1300 BR 52

supersedes  
company:  
engine:

4.69  
Hanomag  
D 131

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,3 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	3,3-4,3 mm		
1.2 Supply pump pressure	1100	5,0-5,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	51,5-52,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	11,0-17,0 cm <sup>3</sup> /1000 strokes		
1.5 Start (mech.)	100	mind. 65,0 cm <sup>3</sup> /1000 strokes		3,0
1.6 Full-load speed regulation	1380	25,0-33,0 cm <sup>3</sup> /1000 strokes		

Testoil-ISO 4113

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min	750-850 (720-880)	1100	1100-1200
	mm	Start	(3,0-4,6)	3,7-4,4 (3,4-4,7)
2.2 Supply pump	rev/min	100	1100	1300
	kp/cm <sup>2</sup>	0,6-1,1 (0,4-1,3)	(4,8-5,7)	5,6-6,1 (5,4-6,3)
Overflow delivery	rev/min	500	1000	
	cm <sup>3</sup> /10 s	mind. 25	55-125 (40-140)	

2.3 Fuel deliveries	Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full		1430-1480 (1410-1500)	0	
			1380	(24,0-34,0)	
			1300	51,0-54,0 (50,0-55,0)	
			1000	(51,0-53,0)	
			600	52,0-55,0 (51,0-56,0)	
	Stop		1300	0	
Idle stop	Full		420-480 (400-500)	0	
			300	(10,0-18,0)	
			100	mind. 65,0	
			500	max. 45,0	
End stop					

Angle to the stop-plate	Re-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 7,5 mm (s.a.BMP)</p> <p>Dimension V = - 1mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 HAN 4,2a 1

1. Edition

En

VA 6/100 H 1300 BR 54-1

supersedes  
company  
engine:

Hanomag  
D 162 R

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	6,0-7,0 mm		
1.2 Supply pump pressure	1100	5,3-5,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	54,0-55,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,0-15,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start (autom.)	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1380	28,0-36,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min	530-680(500-710)	1100	1180-1300
	mm	Start	(5,7-7,3)	7,7-8,4(7,4-8,7)
2.2 Supply pump	rev/min	100	1100	1130
	kp/cm <sup>2</sup>	1,0-1,5(0,8-1,7)	(5,1-6,0)	5,9-6,4(5,7-6,6)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	-	-	-

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1430-1470 (1410-1490)	0  1380 1280 1100 500	(27,0-37,0) 53,5-56,5 (52,5-57,5) (53,5-55,5) 51,0-55,0 (50,0-56,0)
	Stop	1300	0	
Idle stop	Full	400-460 (380-480)	0	
	Start	300 100 500	mind.65,0 max.45,0	(8,0-16,0)
End stop				

Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha</math> = 25 <math>\pm</math> 4°</p> <p><math>\beta</math> = 40 <math>\pm</math> 8°</p> <p><math>\gamma</math> = 30 - 8°</p> <p><math>\delta</math> = 60 <math>\pm</math> 8°</p>	<p><b>Pump</b></p> <p>Dimension IV = 6,0 mm (s.a.BMP)</p> <p>Dimension V = - mm</p> <p>Dimension I      **</p> <p>Dimension II      **</p>

\* \* According to the wear-parts list (BR)

## Testoil-ISO 4113

# Test Specifications

## Distributor-Type

## Fuel Injection Pump

46

WPP 001/4 HAN 4,7a 1

1. Edition

VA 6/100 H 1500 BR 138-3  
0 460 306 092

supersedes  
company  
engine

Hanomag  
D, 161 W

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	5,6-6,6 mm		
1.2 Supply pump pressure	1000	4,6-5,1 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1200	47,5-48,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,0-15,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1570	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0

### 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min mm	380-510(350-540)	1000	1290-1420
		Start	(5,3-6,9)	8,7-9,4(8,4-9,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100	1000	1500
		1,0-1,5(0,8-1,7)	(4,4-5,3)	5,9-6,4(5,7-6,6)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500		1500
		mind.25		55-125(40-140)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1610-1660 (1590-1680)	0	
		1570	11,0-19,0)	
		1450	45,0-48,0 (44,0-49,0)	
		1200	(47,0-49,0)	
		500	37,0-40,0 (36,0-41,0)	
	Stop	1500	0	
Idle stop	Full	400-460 (380-480)	0	
		300	(8,0-16,0)	
		100	mind.65,0	
End stop	Start	120-200		

Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = - mm</p> <p>Dimension V = - mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 HAN 4,7a

2. Edition

En

VA 6/100 H 1500 BR 138-2  
0 460 306 091

supersedes 6.69  
company: Hanomag  
engine: D 162 W

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,3 mm

#### 1. Settings

	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	6,1-7,1 mm		
1.2 Supply pump pressure	1100	5,3-5,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	54,0-55,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,0-15,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1580	28,0-36,0 cm <sup>3</sup> /1000 strokes		

#### 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	530-680(500-710) Start	1100 (5,8-7,4)	1240-1370 8,7-9,4(8,4-9,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100 1,0-1,5(0,8-1,7)	1100 (5,1-6,0)	1300 5,9-6,4(5,7-6,6)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 mind.25		1500 55-125 (40-140)

#### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1630-1670 (1610-1690) 1580 1280 1100 600	0 53,5-56,5 55,5-58,5	(27,0-37,0) (52,5-57,5) (53,5-55,5) (54,5-59,5)
	Stop	1500	0	
Idle stop	Full	400-460 (380-480) 300	0	
	Start	100 120-220	mind.65,0	(8,0-16,0)
End stop				

Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 5,0 mm (BMP 161/32)</p> <p>Dimension V = - mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 HAN 4,2A

3. Edition

En

VA 6/100 H 1300 BR 138  
0 460 306 064

supersedes 4.69  
company Hanomag  
engine D 161 K

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

0,3

Pre-stroke setting -mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	3,5-4,5 mm		
1.2 Supply pump pressure	1000	4,6-5,1 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	42,5-43,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	10,0-16,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1360	21,0-29,0 cm <sup>3</sup> /1000 strokes		

Testoil-ISO 4113

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min mm	520-670 (490-700)	1000	1120-1240
		Start	(3,2-4,8)	4,7-5,4(4,4-5,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100	1000	1300
		0,8-1,3(0,6-1,5)	(4,4-5,3)	5,6-6,1(5,4-6,3)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500		1000
		mind. 25		55-125(40-140)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1400-1450 (1380-1470)	0 1360 (20,0-30,0) 1280 (41,5-46,5) 1100 (42,0-44,0) 500 (36,5-41,5)	
	Stop	1300	0	
Idle stop	Full	360-420 (340-440)	0 (9,0-17,0)	
End stop	Start	300 100 130-230	mind. 65,0	

Angle to the stop-plate	Pre-setting dimensions
<b>Pump</b>	
$\alpha$ = 25 $\pm$ 4°	Dimension IV = 5,5 mm
$\beta$ = 40 $\pm$ 8°	Dimension V = - mm
$\gamma$ = 30 - 8°	Dimension I =
$\delta$ = 60 + 8°	Dimension II = *
	Dimension III =

\* According to the wear-parts list

**Testoil-ISO 4113**

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 HAN 3,1b 2

1. Edition

En

VA 4/100 H 1500 BR 137-3  
0 460 304 096

supersedes  
company: Hanomag  
engine: D 141 W

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,1 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	5,0-6,0 mm		
1.2 Supply pump pressure	1100	4,4-4,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1200	52,5-53,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	320	17,0-23,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1600	13,0-21,0 cm <sup>3</sup> /1000 strokes		3,0

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min mm	560-720 (530-740)	1100	1350-1470
		Start	(4,7-6,3)	8,7-9,4 (8,4-9,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100	1100	1500
		0,6-1,1 (0,4-1,3)	(4,2-5,1)	5,6-6,1 (5,4-6,3)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500		1500
		mind.25		55-125 (40-140)

2.3 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1630-1680 (1610-1700)	0	
		1600	(16,0-24,0)	
		1450	50,0-53,0 (49,0-54,0)	
		1200	(52,0-54,0)	
		600	47,0-50,0 (46,0-51,0)	
	Stop	1500	0	
Idle stop	Full	450-510 (430-530)	0	
		320	(16,0-24,0)	
	Start	100	mind.65,0	
End stop		300-550		

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 3,0 mm</p> <p>Dimension V = - mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 DEE 2,5e

3. Edition

En

VA 3/100 H 1200 BR 28

supersedes 12.71  
company John Deere  
engine 493 B

Plunger lift 1.72 mm referenced to outlet  
"A" in line with engine TDC position.

Pre-stroke setting 0,3 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	600	6,9-7,9 mm		
1.2 Supply pump pressure	600	5,1-5,6 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	48,5-49,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	400	9,0-15,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	--	-- cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1230	26,0-34,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min	100-260(70-290)	600	790-940
	mm	Start	(6,6-8,2)	9,7-10,4(9,4-10,7)
2.2 Supply pump	rev/min	100	600	1000
	kp/cm <sup>2</sup>	1,7-2,2(1,5-2,4)	(4,9-5,8)	6,2-6,7(6,0-6,9)
Overflow delivery	rev/min	500	1000	
	cm <sup>3</sup> /10 s	mind. 25	55-125(40-140)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1290-1380 (1270-1400)	0 max.3,0 1330 1230 1150 1000 500 100 1200	(25,0-35,0) (45,5-50,5) (48,0-50,0) (40,5-46,5)
	Stop		mind.32,5 0	
Idle stop	Full	470-530 (450-550)	0 (8,0-16,0)	
	Start	400	--	
End stop		--	--	

Testoil-ISO 4113

B15

BOSCH

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.  
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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha</math> = 25 <math>\pm</math> 4°</p> <p><math>\beta</math> = 30 <math>\pm</math> 8°</p> <p><math>\gamma</math> = 30 - 8°</p> <p><math>\delta</math> = 60 <math>\pm</math> 8°</p>	<p>Pump</p> <p>Dimension IV = 3,0 mm</p> <p>Dimension V = - mm</p> <p>Dimension I = 7,0 mm</p> <p>Dimension II = 10,5 mm</p> <p>Dimension III = 26,8 mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 HAN 4,2 a 1

1. Edition

En

VA 6/100 H 1300 BR 138-1

0 460 306 065

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm

supersedes

company Hanomag  
engine D 162 R

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	6,7-7,1 mm		
1.2 Supply pump pressure	1100	5,3-5,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	54,0-55,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,0-15,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1380	28,0-36,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min mm	530-680(500-710)	1100	1180-1300
	Start		(5,8-7,4)	7,7-8,4(7,4-8,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100	1100	1300
		1,0-1,5(0,8-1,7)	(5,1-6,0)	5,9-6,4(5,7-6,6)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500		100
		mind.25		55-125(40-140)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1430-1470 (1410-1490) 1380 1280 1100 500	0 (27,0-37,0) 53,5-56,5 (52,5-57,5) (53,5-55,5) 52,0-55,0 (51,0-55,0)	
	Stop	1300	0	
Idle stop	Full	400-460 (380-480) 300 100	0 (8,0-16,0)	
End stop	Start	120-200	mind.65,0	

Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha</math> = 25 <math>\pm</math> 4°</p> <p><math>\beta</math> = 40 <math>\pm</math> 8°</p> <p><math>\gamma</math> = 30 <math>\pm</math> 8°</p> <p><math>\delta</math> = 60 <math>\pm</math> 8°</p>	<p>Pump</p> <p>Dimension IV = 5,0 mm</p> <p>Dimension V = - mm</p> <p>Dimension I =</p> <p>Dimension II = *</p> <p>Dimension III</p>

\* According to the wear-parts list

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 SAV 3,3 b

2. Edition

En

VA 4/100 H 1250 BR 141-3  
0 460 304 131

supersedes 7.71  
company Saviem  
engine Manox 712-51

Pre-stroke setting 0,1 mm  
Plunger lift 0.3 mm at 23° BTDC

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

TestOil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	5,3-6,3 mm		
1.2 Supply pump pressure	900	4,8-5,3 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	49,0-50,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	31,0-39,0 cm <sup>3</sup> /1000 strokes		

#### 2. Test Specifications

			Checking values in brackets	
2.1 Timing device	rev/min	380-530 (350-560)	900	1100-1250
	mm	Start	(5,0-6,6)	8,7-9,4(8,4-9,7)
2.2 Supply pump	rev/min	100	900	1250
	kp/cm <sup>2</sup>	0,8-1,3(0,6-1,5)	(4,6-5,5)	5,4-5,9(5,2-6,1)
Overflow delivery	rev/min	500		1250
	cm <sup>3</sup> /10 s	mind.25		55-125(40-140)

#### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1360-1410 (1340-1430)	0	
		1300	(31,0-39,0)	
		1250	51,0-54,0 (50,0-53,0)	
		900	(48,5-50,5)	
		500	44,0-47,0 (43,0-48,0)	
	Stop	1250	0	
Idle stop	Full	350-400 (330-420)	0	
		300	(6,0-14,0)	
		100	mind. 80,0	
End stop	Start	120-220		

Angle to the stop-plate	Pre-setting dimensions
<p>Pump = <math>25 \pm 4^\circ</math></p> <p><math>\alpha = 35 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump = 2,0 mm</p> <p>Dimension IV = - mm</p> <p>Dimension V = - mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 SAV 3,3 a

2. Edition

En

VA 4/100 H 1600 BR 141  
0 460 304 081

supersedes 6.68  
company Renault  
engine. 7120-03/04

Pre-stroke setting 0,1 mm  
Plunger lift 0,3 mm at 23° BTDC

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	4,8-5,8 mm		
1.2 Supply pump pressure	800	4,2-4,7 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	48,0-49,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,5-15,5 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1640	36,0-44,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	340-520(310-550)	800	1390-1570
	Start	(4,5-6,1)	13,7-14,4(13,4-14,7)	
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100	800	1600
	1,1-1,6(0,9-1,8)	4,0-4,9	7,0-7,5(6,8-7,7)	
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500		1500
	mind. 25		55-125(40-140)	

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1740-1850 (1720-1870) 1770 1640 1550 1000 800	0 max. 5,0 45,5-48,5 (35,0-45,0) (44,5-49,5) (47,5-49,5) 40,5-44,0 (39,5-45,0)	
	Stop	1600	0	
Idle stop	Full	370-480 (350-500) 300 100	0 (8,5-16,5)	
End stop	Start	120-220	mind. 80,0	

Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = - mm</p> <p>Dimension V = - mm</p> <p>According to the wear-parts list</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 HAN 3,1a 4  
1. Edition

En

VA 4/100 H 1700 CR 118  
CR 118-2

0 460 304 129  
0 460 304 152

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,1 mm  $\pm$  0,02 ( $\pm$  0,04)

supersedes  
company: Hanomag  
engine: D 141 L

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1300	2,8-3,6 mm		
1.2 Supply pump pressure	1300	5,4-3,6 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	47,0-48,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	10,0-16,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1850	16,0-24,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min mm	750-900(720-930)	1300	1550-1670
		Start	(2,5-3,9)	5,1-5,8(4,8-6,1)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200	1300	1700
		1,0-1,5(0,8-1,7)	(5,2-6,1)	6,7-7,2(6,5-7,4)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500		1700
		55-100(40-110)		55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1880-1960 (1860-1980)	0	
		1850	(15,0-25,0)	
		1650	(42,5-47,5)	
		1000	(46,5-48,5)	
		500	41,0-45,0 (40,0-46,0)	
	Stop	1700	0	
Idle stop	Full	430-560 (410-580)	0	
End stop	Start	100 180-250	mind.65,0	

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension <math>\text{W}</math> 4,5 mm</p> <p>Dimension <math>\text{Y}</math> 24,6 mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

En

46

WPP 001/4 HAN 3,1a 1

2. Edition

VA 4/100 H 1700 CR 118-1  
CR 118-3

supersedes 12.70  
company Hanomag  
engine D 142 L

0 460 304 130 Setting of the pointer at a stroke of 1 mm in  
0 460 304 153 relation to outlet "A".

Pre-stroke setting 0,1 mm  $\pm$  0,02 ( $\pm$  0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1300	3,6-4,4 mm		
1.2 Supply pump pressure	1300	5,4-5,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	54,5-55,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	10,0-16,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1750	38,5-46,5 cm <sup>3</sup> /1000 strokes		3,0

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min mm	750-930(720-960)	1300	1550-1700
		Start	(3,3-4,7)	6,1-6,8(5,8-7,1)
		200	1300	1700
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	1,2-1,7(1,0-1,9)	(5,2-6,1)	6,9-7,4(6,7-7,6)
		500		1700
Overflow delivery	rev/min cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1870-1920 (1850-1940)	0	
		1750	+ 1,0 (37,5-47,5)	
		1680	55,0-58,0 (54,0-59,0)	
		1000	+ 0,5 (54,0-56,0)	
		600	53,0-57,0 (52,0-58,0)	
	Stop	1700	0	
Idle stop	Full	480-580 (460-600)	0	
		350	$\pm$ (9,0-17,0)	
		100	mind.65,0	
	Start	180-250		
End stop				

Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 4,0 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 SAV 3,3 b 7

1. Edition

En

VA 4/100 H 1300 CR 141-10  
0 460 304 216

supersedes

company

Saviem

engine

712-50-050

Pre-stroke setting 0,5 mm  $\pm 0,02$  ( $\pm 0,04$ )

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	3,1-4,1 mm		
1.2 Supply pump pressure	1000	5,5-6,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	56,0-57,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	17,0-23,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1350	39,0-40,4 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min	470-620(440-650)	1000	1200
	mm	Start	2,8-4,4	4,3-5,3
2.2 Supply pump	rev/min	200	1000	1300
	kp/cm <sup>2</sup>	1,7-2,2(1,5-2,4)	(5,3-6,2)	6,8-7,3(6,6-7,5)
Overflow delivery	rev/min	500		1300
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1420-1500 (1400-1520) 1350 1320-1350 1300 900 500	0 (38,6-41,4) Start 55,5-58,5 (54,5-59,5) (55,5-57,5) 48,5-51,1 (47,5-52,5)	
	Stop	1300	0	
Idle stop	Full	450-520 (430-540) 300 100	0 (16,0-24,0)	
End stop	Start	110-210	mind. 80,0	

C13

C13

BOSCH

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 4,6 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

## Fuel Injection Pump

46

WPP 001/4 SAV 3,3 b 8

1. Edition

VA 4/100 H 1500 CR 141-11  
0 460 304 211

supersedes  
company: Saviem  
engine: 712-52-01

Pre-stroke setting 0,5 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1200	6,2-7,2 mm		
1.2 Supply pump pressure	1200	5,8-6,3 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	53,5-54,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1600	26,0-34,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min mm	350-500(330-520)	1200	1380-1530
		Start	(5,5-6,6)	7,9-8,6(7,6-8,9)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200	1200	1500
		1,3-1,8(1,1-2,0)	(5,6-6,5)	6,8-7,3(6,6-7,5)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500		1500
		55-100(40-110)		55-100(40-110)

2.3 Fuel deliveries	Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full		1680-1780 (1660-1800)	0	
			1600	(25,0-35,0)	
			1520-1550		
			1500	47,5-50,5 (46,5-51,5)	
			900	(53,0-55,0)	
			500	45,0-49,0 (49,0-50,0)	
	Stop		1500	0	
Idle stop	Full		370-450 (350-470)	0	
			300	(6,0-14,0)	
End stop	Start		110-210	mind.80,0	

Testoil-ISO 4113

C15

E15

**BOSCH**

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha</math> = <math>25 \pm 4^\circ</math></p> <p><math>\beta</math> = <math>50 \pm 8^\circ</math></p> <p><math>\gamma</math> = <math>30 - 8^\circ</math></p> <p><math>\delta</math> = <math>60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV --- mm</p> <p>Dimension V --- mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 SAV 3,3 d

2. Edition

En

VA 4/100 H 1600 CR 141-1  
0 460 304 141

supersedes 4.78  
company Saviem  
engine 712..

Pre-stroke setting 0,5 mm  $\pm 0,02$  ( $\pm 0,04$ )

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1200	5,2-6,0 mm		
1.2 Supply pump pressure	1200	5,7-6,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	54,5-55,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	-	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1720	7,0-13,0 cm <sup>3</sup> /1000 strokes		

#### 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	430-580(400-610)	1200	1500-1600
	mm	Start	(4,9-6,3)	8,0-8,7(7,7-9,0)
2.2 Supply pump	rev/min	200	1200	1500
	kp/cm <sup>2</sup>	1,3-1,8(1,1-2,0)	(5,5-6,4)	6,8-7,3(6,6-7,5)
Overflow delivery	rev/min	500		1600
	cm <sup>3</sup> /10 s	55-100(40-110)		55.100(40-110)

#### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1770-1860 (1750-1880)	0	
		1720	(6,0-14,0)	
		1550	48,5-51,5 (47,5-52,5)	
		900	(54,0-56,0)	
		500	46,5-50,5 (45,5-51,5)	
	Stop	1600	0	
Idle stop	Full	360-430 (340-450)	0	
		300	(6,0-14,0)	
		1000	mind.80,0	
End stop	Start	120-220		

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 4,00 mm</p> <p>Dimension V = 24,65 mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 SAV 5,2a 3

2. Edition

En

VA 6/100 H 1000 CR 124-8  
0 460 306 197

supersedes 5.76  
company Saviem  
engine 597-50-061

Pre-stroke setting 0,2 mm  $\pm 0,02$  ( $\pm 0,04$ )

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	2,0-3,0 mm		
1.2 Supply pump pressure	800	4,3-4,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	700	54,0-55,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		2,5
1.5 Start	100	mind.95,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1070	21,0-29,0 cm <sup>3</sup> /1000 strokes		

Testoil-ISO 4113

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	Start 550-650(520-680) 0,8-1,8(0,5-1,5)	700	800	900	950-1070
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200 1,3-1,8(1,1-2,0)	800 (4,1-5,0)			1000
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 55-100(40-110)			4,9-5,4(4,7-5,6)	1000
					55-100(40-110)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1090-1170 (1070-1190) 1070 1000 700 500	0 (20,0-30,0) 51,5-54,5 (50,5-55,5) (53,5-55,5) 54,5-57,5 (53,5-58,5)	
	Stop	1000	0	
Idle stop	Full	360-430 300	0 (6,0-14,0)	
	Start	100	mind.95,0	
End stop		150-250		

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 35 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 1,6 mm</p> <p>Dimension V = 24,6 mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 SAV 3,3e

2. Edition

En

VA 4/100 H 1600 CR 147-7  
0 460 304 169

supersedes 4.78  
company Saviem  
engine 720-01-01

Pre-stroke setting 0,5 mm  $\pm$  0,02 ( $\pm$  0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1200	5,2-6,0 mm		
1.2 Supply pump pressure	1200	5,5-6,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	61,0-62,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		3m0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1750	8,0-16,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	430-580(400-610)	1200	1500-1600
	Start		(4,9-6,3)	8,0-8,7(7,7-9,0)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200	1200	1600
		1,0-1,5(0,8-1,7)	(5,3-6,2)	6,9-7,4(6,7-7,6)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500		1600
		55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1800-1920 (1780-1940)	0	
		1750	(7,0-17,0)	
		1550	58,5-61,5 (57,5-62,5)	
		900	(60,5-62,5)	
		500	55,0-59,0 (54,0-60,0)	
	Stop	1600	0	
Idle stop	Full	380-480 (360-500)	0	
		300	(6,0-14,0)	
		100	mind.80,0	
End stop	Start	120-220		

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 50 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 3,50 mm</p> <p>Dimension V = 24,65 mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 SAV 5,2a 2

2. Edition

En

VA 6/100 H 1250 CR 124-7  
0 460 305 195

supersedes 5.75  
company Saviem  
engine 797-50-051

Pre-stroke setting 0,2 mm  $\pm$  0,02 ( $\pm$  0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	4,65-4,75 mm		
1.2 Supply pump pressure	1100	5,6-6,1 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	64,0-65,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind. 80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1350	16,0-24,0 cm <sup>3</sup> /1000 strokes		3,0

## 2. Test Specifications

		Checking values in brackets	700	1100	1120-1270
2.1 Timing device	rev/min mm	550-700(520-730)	700	1100	1120-1270
		Start 0,5-1,5(0,2-1,8)(4,35-5,05)5,2-5,9(4,9-6,2)			
		200		1100	1250
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	1,4-1,9(1,2-2,1)		(5,4-6,3) 6,1-6,6(5,9-6,8)	
		500			1250
Overflow delivery	rev/min cm <sup>3</sup> /10s	55-100(40-110)			55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1380-1430 (1360-1450) 1350 1250-1270 1230 1100 500	0  Start 63,5-66,5 (62,5-67,5) 53,0-57,0 (52,0-58,0)	(15,0-25,0)
	Stop	1250	0	
Idle stop	Full	370-430 (350-450) 300 100	0  (6,0-14,0)	
End stop	Start	150-250	mind. 80,0	

Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 50 \pm 8^\circ</math></p> <p><math>\gamma = 30 \pm 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 2,4 mm</p> <p>Dimension V = 24,6 mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

En

46

WPP 001/4 SAV 5,2 e

2. Edition

VA 6/100 H 1500 CR 124-9  
0 460 306 230

supersedes 12.78  
company Saviem  
engine 797 Marine

Pre-stroke setting 0,2 mm  $\pm$  0,02 ( $\pm$  0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	3,6-4,4 mm		
1.2 Supply pump pressure	1100	5,7-6,7 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	78,0-79,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,0-15,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1580	36,0-44,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets			
2.1 Timing device	rev/min	800	1100	1300	1350-1500
	mm	0,5-1,8(0,2-2,1)	(3,3-4,7)	5,6-6,4(5,3-6,7)	7,0-7,7(6,7-8,0)
2.2 Supply pump	rev/min	200	1100		1300
	kp/cm <sup>2</sup>	1,4-1,9(1,2-2,1)(5,5-6,9)			6,7-7,2(6,5-7,4)
Overflow delivery	rev/min	500			1500
	cm <sup>3</sup> /10s	55-100(40-110)			55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1650 1580 1450 1100 500	max. 1,0 36,0-44,0 (35,0-45,0) 76,5-79,5 (75,5-80,5) (77,5-79,5) 66,0-68,0 (65,0-69,0)	
	Stop	1500	0	
Idle stop	Full	420-480 (400-500) 300	0 (8,0-16,0)	
	Start	100	mind. 80,0	
End stop		150-250		

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 30 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 3,50 mm</p> <p>Dimension V = 24,65 mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

En

46

wpp 001/4 SAV 3,3 b 1  
2. Edition

VA 4/100 1500 CR 141-9  
0 460 304 197

supersedes  
company  
engine

Pre-stroke setting 0,5 mm  $\pm 0,02 (\pm 0,04)$

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1200	5,1-6,1 mm		
1.2 Supply pump pressure	1200	5,9-6,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	64,0-65,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start (autom.)	100	mind. 80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1600	23,5-31,5 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	800	1200	1400	1400-1520
	mm	1,9-2,9(1,6-3,2)(4,8-6,4)6,4-7,4(6,1-7,7)7,0-7,7(6,7-8,0)			
2.2 Supply pump	rev/min	200	1200		1500
	kp/cm <sup>2</sup>	1,3-1,9(1,1-2,1) (5,7-6,6)			7,2-7,7(7,0-7,9)
Overflow delivery	rev/min	500			1500
	cm <sup>3</sup> /10 s	55-100(40-110)			55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1690-1800 (1670-1820)	0	
		1600	(22,5-32,5)	
		1450	(58,5-63,5)	
		1000	(63,5-65,5)	
		500	58,5-61,5 (57,5-62,5)	
	Stop	1500	0	
Idle stop	Full	400-500 (380-520)	0	
		300	(6,0-14,0)	
	Start	100	mind. 80,0	
End stop		110-210		

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 3,00 mm</p> <p>Dimension V = 24,65 mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 MAN 5,2d

1st Edition

En

VA 6/100 H 1500 CR 181-4  
0 460 306 225

supersedes 9.78  
company: MAN  
engine: Saviem 79702/03

Pre-stroke setting 0,5 mm  $\pm 0,02$  ( $\pm 0,04$ )

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1200	5,7-6,5 mm		
1.2 Supply pump pressure	1200	6,2-6,7 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1200	63,0-64,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	13,0-19,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 75,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1600	28,0-36,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	700 1,1-2,1(0,8-2,4)	1200 (5,4-6,8)	1500 7,0-7,7(6,7-7,9)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200 1,6-2,1(1,4-2,3)	1200 (6,0-6,9)	1500 7,2-7,7(7,0-7,9)
Overflow delivery	rev/min cm <sup>3</sup> /10s	500 55-100(40-110)		1500 55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1700-1750 (1680-1770)	0	
		1600	(27,0-37,0)	
		1500	62,0-65,0 (61,0-66,0)	
		1200	(62,5-64,5)	
		500	47,0-51,0 (46,0-52,0)	
	Stop	1500	0	
Idle stop	Full	420-470 (400-490)	0	
		300	(12,0-20,0)	
	Start	100	mind. 75,0	
End stop		110-210		

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Angle to the stop-plate	Pre-setting dimensions
<b>Pump</b> $\alpha = 25 \pm 4^\circ$ $\beta = 50 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	<b>Pump</b> <b>Dimension IV = 3,80 mm</b> <b>Dimension V = 24,65 mm</b>

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 STE 6,6 a

2. Edition

VA 6/100 H 1100 CR 178-1  
0 460 306 209

supersedes 5.77  
company Steyr  
engine WD 612.40

Pre-stroke setting 0,1 mm  $\pm 0,02 (\pm 0,04)$

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	4,7-5,7 mm		
1.2 Supply pump pressure	900	5,0-5,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	78,5-79,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	12,0-18,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.90,0 cm <sup>3</sup> /1000 strokes		3,0
1.6 Full-load speed regulation	1200	43,5-51,5 cm <sup>3</sup> /1000 strokes		

Testoil-ISO 4113

## 2. Test Specifications

			Checking values in brackets	
2.1 Timing device	rev/min	500	900	
	mm	0,6-1,6(0,3-1,9)	(4,4-6,0)	
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200	900	1100
		1,5-2,0(1,3-2,2)	5,0-5,5(4,8-5,7)	5,4-5,9(5,2-6,1)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500		1100
		55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1270-1320 (1250-1340)	0	
		1200	(42,5-52,5)	
		1100	70,75-73,25(69,75-74,25)	
		800	(78,0-80,0)	
		500	72,0-75,0 (71,0-76,0)	
	Stop	1100	0	
Idle stop	Full	450-500 (430-520)	0	
		300	(11,0-19,0)	
		100		
		120-220	mind.90,0	
End stop	Start			

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 0,60 mm</p> <p>Dimension V = 23,65 mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

En

46

WPP 001/4 STE 6,0k  
2- Edition

VA 6/1000 H 1150 CR 160-2 .  
0 460 306 224

supersedes 10.77  
company Steyr  
engine WD 610.44

Pre-stroke setting 0,1 mm  $\pm 0,02 (\pm 0,04)$

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	3,2-4,2 mm		
1.2 Supply pump pressure	900	4,7-5,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1150	68,5-69,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	17,0-23,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1250	41,0-49,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min	300-450(270-480)	900	1000-1150
	mm	Start	(2,9-4,5)	5,2-4,9(3,9-5,2)
2.2 Supply pump	rev/min	200	900	1150
	kp/cm <sup>2</sup>	1,3-1,8(1,1-2,0)	(4,5-5,4)	5,5-6,0(5,3-6,2)
Overflow delivery	rev/min	500		1150
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

#### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1340-1420 (1320-1440) 1250 1200-1230 1150 900 500	0 (40,0-50,0) Start (68,0-70,0) 65,5-67,5 (64,5-68,5) 63,5-66,5 (62,5-67,5)	
	Stop	1150	0	
Idle stop	Full	420-500 (400-520) 300	0 (16,0-24,0)	
	Start	100	mind.90,0	
End stop		120-220		

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 50 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 1,60 mm</p> <p>Dimension V = 24,65 mm</p>

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 STE 5,0a

4. Edition

En

VA 6/100 H 1150 CR 160-4  
0 460 306 242

supersedes 4.80  
company Steyr  
engine WD 611.40

Pre-stroke setting 0,2 mm  $\pm$  0,02 ( $\pm$  0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	2,2-3,2 mm		
1.2 Supply pump pressure	1100	6,1-6,6 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	56,0-57,0 cm <sup>3</sup> /1000 strokes		
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	16,0-22,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1250	38,0-46,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	--	700	1100
	mm	Start	(1,9-3,5)	5,5-6,3(5,2-6,6)
2.2 Supply pump	rev/min	200	1100	1150
	kp/cm <sup>2</sup>	1,5-2,0(1,3-2,2)	(5,9-6,8)	--
Overflow delivery	rev/min	500		1150
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1360-1410 (1340-1430)	0	
		1250	(37,0-47,0)	
		1100	(55,5-57,5)	
		900	55,3-57,7 (54,3-58,7)	
		500	56,5-60,5 (55,5-61,5)	
	Stop	1150	0	
Idle stop	Full	430-480 (410-500)	0	
		300	(15,0-23,0)	
	Start	100	mind.90,0	
End stop		260-340		

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 50 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 4,20 mm</p> <p>Dimension V = 25,65 mm</p>

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 STE 6,0 f 3

1. Edition

VA 6/100 H 1400 CR 160-1  
0 460 306 151

supersedes  
company  
engine

Steyr  
WD 610.00

Pre-stroke setting 0,1 mm  $\pm 0,02 (\pm 0,04)$

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	3,1-3,9 mm		
1.2 Supply pump pressure	1000	5,2-5,7 kp/cm <sup>2</sup>		2,5
1.3 Full-load delivery without charge-air pressure	1200	69,0-71,0 cm <sup>3</sup> /1000 strokes		
Full-load delivery with charge-air pressure	-	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,5-15,5 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1530	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min mm	450-600(420-630)	1000	110-1250
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	Start (2,8-4,2) 100	1000	4,3-5,0(4,0-5,3) 1400
		1,5-2,0(1,3-2,2)	(5,0-5,9)	6,3-6,8(6,1-7,0) 1400
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1650-1730 (1630-1750) 1600 1530 1400 1200 500	0 max.5,0 (25,0-35,0) 66,5-68,5 (65,5-69,5) (68,5-71,5) 63,0-67,0 (62,0-68,0)	
	Stop	1400	0	
Idle stop	Full	420-490 (400-510) 300	0 (8,5-16,5)	
End stop	Start	100 120-220	mind.90,0	

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 2,20 mm</p> <p>Dimension V = 24,60 mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 STE 6,0 f 1

2. Edition

En

VA 6/100 H 1150 CR 160  
0 460 306 143

supersedes 5.72  
company Steyr  
engine WD 610.50

Pre-stroke setting 0,1 mm  $\pm 0,02 (\pm 0,04)$

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	2,6-3,4 mm		
1.2 Supply pump pressure	800	4,7-5,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	62,0-63,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1250	21,0-29,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min mm	300-450 (270-480)	800	1050-1150
	Start	(2,3-3,7)	4,3-5,0(4,0-5,3)	
	200	800	1150	
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	1,5-2,0(1,3-2,2)	(4,5-5,4)	5,9-6,4(5,7-6,6)
	500			1150
Overflow delivery	rev/min cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1280 1250 1100 900 500	max.10,0 (20,0-30,0) (61,5-63,5) 61,0-63,0 (60,0-64,0) 61,0-65,0 (60,0-66,0)	
	Stop	1150	0	
Idle stop	Full	370-420 (350-440) 300 100	0 (6,0-14,0)	
End stop	Start	120-220	mind.80,0	

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045

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 2,0 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

En

46

WPP 001/4 SAV 3,3 a 1  
3. Edition

VA 4/100 H 1600 CR 141  
CR 141-5  
0 460 304 140  
0 460 304 161

supersedes 4.78  
company: Saviem  
engine: 712

Pre-stroke setting 0,5 mm  $\pm$  0,02 ( $\pm$  0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1300	6,2-7,2 mm		
1.2 Supply pump pressure	1300	6,0-6,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	49,5-50,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1650	26,0-34,0 cm <sup>3</sup> /1000 strokes		

#### 2. Test Specifications

2.1 Timing device	rev/min mm	400-500 (430-530) Start 700	1300	1450-1600
		200 1,4-2,4(1,1- 2,7)(5,9-7,5) 8,0-8,7(7,7-9,0)	1300	1600
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	1,1-1,6(0,9-1,8)	(5,8-6,7) 7,5-8,0(7,3-8,2)	
		500		1600
Overflow delivery	rev/min cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

#### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1730-1800 (1710-1820) 1720 1650 1580 100 500	0 max.13,0 (25,0-35,0) 41,0-44,0 (40,0-45,0) (49,0-51,0) 40,0-44,0 (39,0-45,0)	
	Stop	1600	0	
Idle stop	Full	360-430 (340-450) 300 100	0 (6,0-14,0)	
End stop	Start	110-220	mind.80,0	

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 4,0 mm</p> <p>Dimension V = 24,65 mm</p>

**Testoil-ISO 4113**

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 SAV 3,3 b 6

1. Edition

En

VA 4/100 H 1350 CR 141-8  
0 460 304 182

supersedes  
company: Saviem  
engine: 712...

Pre-stroke setting 0,5 mm  $\pm 0,02 (\pm 0,04)$

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	3,2-4,0 mm		
1.2 Supply pump pressure	1000	5,5-6,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	51,5-52,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-12,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1450	16,0-24,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	Start 470-620(440-650) 0,8-1,8(0,5-2,1)(2,9-4,3)	700	1000	1200	1250-1400
		200		1000		1350
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	1,7-2,2(1,5-2,4)		(5,3-6,2)		--
		500				1350
Overflow delivery	rev/min cm <sup>3</sup> /10 s	55-100(40-110)				55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1490-1550 (1470-1570) 1450 1370-1400 1350 900 500	0 (17,0-25,0) Start 47,5-50,5 (46,5-51,1) (51,0-53,0) 53,5-56,5 (52,5-57,5)	
	Stop	1350	0	
Idle stop	Full	370-430 (350-450) 300 100	0 (6,0-14,0)	
End stop	Start	110-210	mind.80,0	

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Angles to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 4,60 mm</p> <p>Dimension V = 24,60 mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 STE 6,6 b

2. Edition

En

VA 6/10 H 1400 CR 160-3  
0 460 306 237

supersedes 1.79  
company Steyr  
engine WD 612.00-LKW

Pre-stroke setting 0,1 mm  $\pm 0,02 (\pm 0,04)$

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	3,9-4,9 mm		
1.2 Supply pump pressure	1100	5,4-5,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1400	69,0-70,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	320	9,0-15,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1500	36,0-44,0 cm <sup>3</sup> /1000 strokes		

#### 2. Test Specifications

	rev/min mm	Checking values in brackets			
		--	600	900	1100
2.1 Timing device	Start	1,5-2,2(1,2-2,5)(3,6-5,2)	5,1-5,9(4,8-6,2)		
	200		1100	1400	
2.2 Supply pump		1,5-2,0(1,3-2,2)	(5,2-6,1)(6,3-6,8(6,1-7,0)		
	500			1400	
Overflow delivery		55-100(40-110)		55-100(40-110)	

#### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1650-1750 (1630-1770)	0	
		1570	max. 10,0	
		1500	(35,0-45,0)	
		1400	(68,5-70,5)	
		1100	71,0-73,0 (70,0-74,0)	
		500	64,5-68,5 (63,5-69,5)	
	Stop	1400	0	
Idle stop	Full	450-500 (430-520)	0	
		320	(8,0-16,0)	
End stop	Start	120-220		

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Angle to the stop-plate	Pre-setting dimensions
<b>Pump</b> $\alpha$ = 25 $\pm$ 4° $\beta$ = 55 $\pm$ 8° $\gamma$ = 30 - 8° $\delta$ = 60 + 8°	<b>Pump</b> Dimension IV = 1,40 mm Dimension V = 24,65 mm

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 SAV 5,2 b 1

1. Edition

En

VA 6/110 H 1450 CR 169-1  
0 460 316 020

supersedes  
company: Saviem  
engine: 798-10-13

Pre-stroke setting 0,4 mm  $\pm$  0,02 ( $\pm$  0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	4,9-5,9 mm	0	
1.2 Supply pump pressure	1000	5,5-6,0 kp/cm <sup>2</sup>	0	
1.3 Full-load delivery without charge-air pressure	500	60,0-63,0 cm <sup>3</sup> /1000 strokes	0	2,5
Full-load delivery with charge-air pressure	900	80,0-81,0 cm <sup>3</sup> /1000 strokes	0,48	
1.4 Idle speed regulation	300	12,0-18,0 cm <sup>3</sup> /1000 strokes	0	
1.5 Start	100	mind.100,0 cm <sup>3</sup> /1000 strokes	0	
1.6 Full-load speed regulation	1550	36,0-44,0 cm <sup>3</sup> /1000 strokes	0,68	

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	450-550(420-580) 650 1000 1050-1200
	Start	1,1-2,1(0,8-2,4)(4,6-6,2)6,1-6,8(5,8-7,1)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200 1000 1450
		1,4-1,9(1,2-2,1) (5,3-6,2)7,1-7,6(6,9-7,8)
Overflow delivery	rev/min cm <sup>3</sup> /10s	500 1450
		55-100(40-110) 55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1650-1710 (1630-1730) 1550 1480-1520 1450 900 750 500	0 (35,0-45,0) Start 76,5-79,5 (75,5-80,5) (79,5-81,5) (73,5-75,0) 60,0-63,0 (59,0-64,0)	0,68 0,68 0,68 0,48 0,35 0
	Stop	1450	0	
Idle stop	Full	370-420 (350-440) 300	0 (11,0-19,0)	
	Start	100	mind.100,0	
End stop		110-220		

Testoil-ISO 4113

E1

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E1

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 50 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 5,0 mm</p> <p>Dimension V = 24,6 mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 SAV 3,3 b 3

1. Edition

En

VA 4/100 H 1500 BR 141-4  
0 460 304 146

supersedes  
company  
engine

Savim  
712

Pre-stroke setting 0,1 mm  
Plunger lift 0.3 mm at 23° BTDC

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	4,8-5,8 mm		
1.2 Supply pump pressure	800	4,5-5,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	57,5-58,5 cm <sup>3</sup> /1000 strokes		1,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,5-15,5 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind. 80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1600	26,0-34,0 cm <sup>3</sup> /1000 strokes		

Testoil-ISO 4113

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min	340-520(310-550)	800	1350-1480
	mm	Start	(4,5-6,1)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100	800	1500
	kp/cm <sup>2</sup>	1,1-1,6(0,9-1,8)	(4,6-6,0)	6,8-7,3(6,6-7,5)
Overflow delivery	rev/min	500		1500
	cm <sup>3</sup> /10s	mind. 25		85-125(70-140)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1650-1720 (1630-1740)	0	
		1600	(25,0-35,0)	
		1480	58,5-61,5 (57,5-62,5)	
		1000	(57,0-59,0)	
		500	52,0-55,5 (51,0-56,5)	
	Stop	1500	0	
Idle stop	Full	370-480 (350-500)	0	
		300	(8,5-26,5)	
		100	mind. 80,0	
End stop	Start	120-220		

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha</math> = <math>25 \pm 4^\circ</math></p> <p><math>\beta</math> = <math>45 \pm 8^\circ</math></p> <p><math>\gamma</math> = <math>30 - 8^\circ</math></p> <p><math>\delta</math> = <math>60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 2,0 mm</p> <p>Dimension V = - mm</p>

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 SAV 3,3 a 1

1. Edition

VA 4/100 H 1600 BR 141-1  
0 460 304 082

supersedes  
company Saviem  
engine 7120-01/02

Pre-stroke setting 0,1 mm  
Plunger lift 0.3 mm at 23° BTDC

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	4,8-5,8 mm		
1.2 Supply pump pressure	800	4,5-5,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	53,0-54,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,5-15,5 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1630	42,0-48,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min	340-520(310-550)	800	1390-1570
	mm	Start	(4,5-6,1)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100	800	1600
	kp/cm <sup>2</sup>	1,1-1,6(0,9-1,8)	(4,3-5,2)	7,0-7,5(6,8-7,7)
Overflow delivery	rev/min	500		1500
	cm <sup>3</sup> /10 s	mind.25		85-125(70-140)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1740-1860 (1720-1880) 1770 1630 1550 1000 500	0 < 5,0 (41,0-49,0) 52,5-55,5 (51,5-56,5) (52,5-54,5) 47,5-50,5 (46,5-51,5)	
	Stop	1600	0	
Idle stop	Full	370-480 (350-500) 300 100	0 (8,5-16,5)	
End stop	Start	120-220	mind.80,0	

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = - mm</p> <p>Dimension V = - mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 SAV 3,3 b 4

1. Edition

VA 4/100 H 1600 BR 141-5  
0 460 904 148

supersedes  
company Saviem  
engine.

Pre-stroke setting 0,1 mm  
Plunger lift 0.3 mm at 23° BTDC

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	4,8-5,9 mm		
1.2 Supply pump pressure	800	4,2-4,7 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	47,5-49,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,5-15,5 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1640	37,0-43,0 cm <sup>3</sup> /1000 strokes		

Testoil-ISO 4113

## 2. Test Specifications

Checking values in brackets				
2.1 Timing device	rev/min	340-520(310-550)	800	1390-1570
	mm	Start	(4,5-6,1)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100	800	1600
	kp/cm <sup>2</sup>	1,1-1,6(0,9-1,8)	(4,0-4,9)	7,0-7,5(6,8-7,7)
Overflow delivery	rev/min	500		1000
	cm <sup>3</sup> /10 s	mind.25		55-125(40-140)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1740-1859 (1720-1870)	0	
		1770	< 5,0	
		1640	(36,0-44,0)	
		1550	45,5-48,5 (44,5-49,5)	
		1000	(47,0-50,0)	
		500	41,0-44,0 (40,0-45,0)	
	Stop	1600	0	
Idle stop	Full	370-480 (350-500)	0	
		300	(8,5-16,5)	
	Start	100	mind.80,0	
End stop		120-200		

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E9

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = - mm</p> <p>Dimension V = - mm</p> <p>According to the wear-parts list</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 SAV 3,3 b 5

1. Edition

En

VA 4/100 H 1500 BR 141-6  
0 460 304 151

supersedes

company: Saviem  
engine 712 01-01  
01-02

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers

Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0,1 mm  
Plunger lift 0.3 mm at 23° BTDC

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1200	9,2-10,2 mm		
1.2 Supply pump pressure	1200	5,5- 6,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	53,0-54,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,5-15,5 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1600	31,0-39,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min mm	370-520(340-550)	1200	1400-1500
	Start	(8,9-10,5)	12,7-13,4(12,4-13,7)	
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100	1200	1500
	1,1-1,6(0,9-1,8)	(5,3-6,2)	6,5-7,0(6,3-7,2)	
Overflow delivery	rev/min cm <sup>3</sup> /10s	500		1500
	mind.25		85-125(70-140)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1780-1850 (1760-1870)	0	
		1740	< 10,0	
		1600	(30,0-40,0)	
		1450	54,0-57,0 (53,0-58,0)	
		1000	(52,5-54,5)	
		500	45,5-49,5 (44,5-50,0)	
	Stop	1500	0	
Idle stop	Full	380-450 (360-470)	0	
		300	(8,5-16,5)	
		100	mind.80,0	
End stop	Start	120-220		

Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 2,0 mm</p> <p>Dimension V = - mm</p>

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 SAV 5,2a 7

1. Edition

En

VA 6/100 H 1500 CR 124-4  
0 460 306 146

Setting of the pointer at a stroke of  
0,3 mm in relation to outlet "A".

Pre-stroke setting. 0,2 mm  $\pm$  0,02 (+ 0,04)

supersedes  
company: Saviem  
engine: 797-05

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	3,1-3,9 mm		
1.2 Supply pump pressure	1100	5,7-6,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	63,5-64,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1650	6,0-14,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		650-800(830-820)	880	1100	1350-1500
2.1 Timing device	rev/min mm	Start	1,0-2,4(0,7-2,7) (2,8-4,2)	6,7-7,4(6,4-7,7)	
		200		1100	1500
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	1,4-1,9(1,2-2,1)		(5,6-6,3) 6,8-7,3(6,6-7,5)	
		500			1500
Overflow delivery	rev/min cm <sup>3</sup> /10 s	55-100(40-110)			55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1680-1780 (1660-1800) 1650 1480 1100 500	0 58,5-61,5 53,0-57,0	(5,0-15,0) (57,5-62,5) (63,0-65,0) (52,0-58,0)
	Stop	1500	0	
Idle stop	Full	400-500 (380-520) 300	0 (6,0-14,0)	
	Start	100	mind.80,0	
End stop		150-250		

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 3,5 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 S4V 5,2a 8

1. Edition

En

VA 6/100 H 1450 CR 124-6  
0 460 306 184

Setting of the pointer at a stroke of  
0,3 mm in relation to outlet "A".

Pre-stroke setting  $0,2 \text{ mm} \pm 0,02 (\pm 0,04)$

supersedes  
company: Saviem  
engine: 797-40

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	3,1-3,9 mm		
1.2 Supply pump pressure	1100	5,7-6,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	63,5-64,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind. 80,0 cm <sup>3</sup> /1000 strokes		3,0
1.6 Full-load speed regulation	1600	6,0-14,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min mm	650-700(620-730)	1100	1350-1500
		Start	(2,8-4,2)	6,7-7,4(6,4-7,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200	1100	1450
		1,4-1,9(1,2-2,1)	(5,5-6,4)	6,7-7,2(6,5-7,4)
		500		1450
Overflow delivery	rev/min cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1650-1750 (1630-1770)	0	
		1600	(5,0-15,0)	
		1430	(58,5-63,5)	
		1100	(63,0-65,0)	
		500	(52,0-58,0)	
	Stop	1450	0	
Idle stop	Full	400-500 (380-520)	0	
		300	(6,0-14,0)	
		100		
		150-250	mind. 80,0	
End stop	Start			

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha</math> = 25 <math>\pm</math> 4° <math>\beta</math> = 55 <math>\pm</math> 8° <math>\gamma</math> = 30 - 8° <math>\delta</math> = 60 + 8°</p>	<p><b>Pump</b></p> <p>Dimension IV = 3,50 mm Dimension V = 24,65 mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

En

46

WPP 001/4 SAV 5,2 a 1  
2. Edition

VA 6/100 H 1450 CR 124  
0 460 306 121

supersedes 7.71  
company Saviem-MAN  
engine 597

Setting of the pointer at a stroke of  
0,3 mm in relation to outlet "A".

Pre-stroke setting 0,2 mm  $\pm 0,02 (+0,04)$

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	3,1-3,9 mm		
1.2 Supply pump pressure	1100	5,7-6,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	63,5-64,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	6,0-14,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1550	26,0-34,0 cm <sup>3</sup> /1000 strokes		

Testoil-ISO 4113

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min	550-800(620-830)	1100	1350-1500
	mm	Start	(2,8-4,2)	7,0-7,7(6,7-8,0)
2.2 Supply pump	rev/min	200	1100	1450
	kp/cm <sup>2</sup>	1,4-1,9(1,2-2,1)	(5,5-6,4)	6,8-7,3(6,6-7,5)
Overflow delivery	rev/min	500		1450
	cm <sup>3</sup> /10s	55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1620-1730 (1600-1750)	0	
		1550	(25,0-35,0)	
		1430	(58,5-63,5)	
		1100	(63,0-65,0)	
		500	(50,5-57,5)	
	Stop	1450	0	
Idle stop	Full	380-450 (360-470)	0	
		300	(5,0-15,0)	
	Start	100	mind.80,0	
End stop		150-250		

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 3,5 mm</p> <p>Dimension V</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 CIT 2,1c 2

1. Edition

VA 4/90 H 2250 CL 184  
0 460 394 030

En

supersedes

company: Citroen  
engine: CRD 90L

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0 mm

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1400	4,3-4,7 mm		
1.2 Supply pump pressure	1400	4,4-4,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1250	36,0-37,0 cm <sup>3</sup> /1000 strokes		1,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	9,5-15,5 cm <sup>3</sup> /1000 strokes		2,0
1.5 Start	100	mind.58,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	2400	12,0-18,0 cm <sup>3</sup> /1000 strokes		

Testoil-ISO 4113

2. Test Specifications		Checking values in brackets			
2.1 Timing device	rev/min mm	425-575(395-605)	1400	1800	2050-2200
		Start	(4,0-5,0)	5,8-7,8(5,5-8,1)	7,0-7,7(6,7-8,0)
		200	1400		2250
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	1,0-1,5(0,8-1,7)	(4,2-5,1)		7,1-7,6(6,9-7,8)
		500			2250
Overflow delivery	rev/min cm <sup>3</sup> /10 s	55-100(40-110)			55-100(40-110)

2.3 Fuel deliveries			
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes
End stop	Full	2500-2600 (2480-2620) 2400 2250 600	0 (11,0-19,0) 33,0-35,0 30,0-33,0
	Stop	2250	0
Idle stop	Full	360-430 (340-450) 350 100	0 (8,5-16,5)
End stop	Start	150-250	mind.58,0

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha</math> = <math>25 \pm 4^\circ</math></p> <p><math>\beta</math> = <math>55 \pm 8^\circ</math></p> <p><math>\gamma</math> = <math>30 - 8^\circ</math></p> <p><math>\delta</math> = <math>60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 1,6 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 CIT 2,1c 1

1. Edition

En

VA 4/90 H 2250 CR 183  
0 460 394 023

supersedes  
company  
engine

Citroen  
CRD-90 Export

Pre-stroke setting 0 mm  $\pm 0,02(\pm 0,04)$

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1400	4,3-4,7 mm		
1.2 Supply pump pressure	1400	4,4-4,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1250	36,0-37,0 cm <sup>3</sup> /1000 strokes		1,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	9,5-15,5 cm <sup>3</sup> /1000 strokes		2,0
1.5 Start	100	mind.58,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	2400	12,0-18,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

2.1 Timing device	rev/min mm	Checking values in brackets				
		425-575(395-605)	700	1400	1800	2050-2200
Start		0,8-1,8(0,5-2,1)(4,0-5,0)	5,8-6,8(6,1-7,1)	7,0-7,7(6,7-8,0)		
	200	1400	1400	1400	2250	
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	1,0-1,5(0,8-1,7)	4,4-4,9(4,2-5,1)		--	
	500	500			2250	
Overflow delivery	rev/min cm <sup>3</sup> /10 s	55-100(40-110)			55-100(40-110)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	2500-2600 (2480-2620)	0	
		2400	(11,0-19,0)	
		2250	(32,0-36,0)	
		1250	(35,5-37,5)	
		600	(29,0-34,0)	
	Stop	1150	0	
Idle stop	Full	360-430 (340-450)	0	
		350	(8,5-16,5)	
		100		
	Start	mind.58,0		
End stop		150-250		

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 1,6 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 HAN 2,3b 4

1. Edition

En

VA 3/100 H 1300 CR 52-1  
0 460 303 099

supersedes  
company  
engine:

Hanomag  
D 132-35 PS

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm  $\pm$  0,04

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1 1 Timing device travel	900	1,2-2,2 mm		
1 2 Supply pump pressure	900	4,5-5,0 kp/cm <sup>2</sup>		
1 3 Full-load delivery without charge-air pressure	800	59,0-60,0 cm <sup>3</sup> /1000 strokes		
Full-load delivery with charge-air pressure	-	-- cm <sup>3</sup> /1000 strokes		
1 4 Idle speed regulation	300	10,0-16,0 cm <sup>3</sup> /1000 strokes		
1 5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1 6 Full-load speed regulation	1350	28,0-36,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min mm	630-780(600-810)	900	980-1120
	Start	(0,9-2,5)	2,4-3,1(2,1-3,4)	
2 2 Supply pump	rev/min kp/cm <sup>2</sup>	- 100 0,8-1,3(0,6-1,5)	900 (4,3-5,2)	1300 5,9-6,4(5,7-6,6)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	800 55-100(40-110)		1300 55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1400-1460 (1380-1480)	0	
		1350	(27,0-37,0)	
		1250	54,5-57,5 (53,5-58,5)	
		800	(58,5-60,5)	
		500	54,5-58,5 (53,5-59,5)	
	Stop	1300	0	
Idle stop	Full	380-480 (360-500)	0	
		300	(9,0-17,0)	
	Start	100	mind.65,0	
End stop		mind.150		

Testoil-ISO 4113

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha</math> = 25 <math>\pm</math> 4°</p> <p><math>\beta</math> = 40 <math>\pm</math> 8°</p> <p><math>\gamma</math> = 30 - 8°</p> <p><math>\delta</math> = 60 + 8°</p>	<p><b>Pump</b></p> <p>Dimension IV = mm</p> <p>Dimension V = 24,65mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 HAN 2,3 d 4

1. Edition

En

VA 3/100 H 1300 CR 52-3

0 460 303 101

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,3 mm  $\pm$  0,02

supersedes Hanomag  
company D 132-40 PS  
engine

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	1,6-2,4 mm		
1.2 Supply pump pressure	900	3,9-4,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	49,0-50,0 cm <sup>3</sup> /1000 strokes		
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	10,0-16,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1350	28,0-36,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

2.1 Timing device	rev/min mm	Checking values in brackets		900	1030-1160
		650-790(620-820)	Start (1,3-2,7) 3,4-4,1(3,1-4,4)		
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	0,8-1,3(0,6-1,5)	(3,7-4,6) 5,2-5,7(5,0-5,9)	900	1300
		500		900	1300
Overflow delivery	rev/min cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)	55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1370-1420 (1350-1440)	0	
		1350	(27,0-37,0)	
		1250	48,0-51,0 (47,0-52,0)	
		1100	(48,5-50,5)	
		500	44,0-48,0 (43,0-49,0)	
	Stop	1300	0	
Idle stop	Full	380-430 (360-450)	0	
		300	(9,0-17,0)	
		100	mind.65,0	
End stop	Start	mind.150		

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 5,5 mm</p> <p>Dimension V = -- mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46  
WPP 001/4 HAN 2,3 c 1  
1. Edition

En

VA 3/100 H 1500 BR 129-5  
0 460 303 089

supersedes  
company: Hanomag  
engine: D 131 W

Setting of the pointer at a stroke of  
1,12 mm in relation to outlet "A".

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,3 mm

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	6,0-7,0 mm		
1.2 Supply pump pressure	1000	4,7-5,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1200	50,5-51,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	11,0-17,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.60,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1560	15,0-23,0 cm <sup>3</sup> /1000 strokes		

#### 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	510-640(480-670)	1000	1260-1400
	mm	Start	(5,7-7,3)	9,7-10,4(9,4-10,7)
2.2 Supply pump	rev/min	100	1000	1500
	kp/cm <sup>2</sup>	0,7-1,2(0,5-1,4)	(4,5-5,4)	6,1-6,6(5,9-6,8)
Overflow delivery	rev/min	500		1500
	cm <sup>3</sup> /10s	mind.25		55-125(40-140)

#### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1580-1630 (1560-1650)	0	
		1560	(14,0-24,0)	
		1450	49,0-52,0 (48,0-53,0)	
		1200	(50,0-52,0)	
		600	44,0-47,0 (43,0-48,0)	
	Stop	1500	0	
Idle stop	Full	380-440 (360-460)	0	
		300	(10,0-18,0)	
		100	mind.60,0	
End stop	Start	300-550		

Testoil-ISO 4113

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha</math> = 25 <math>\pm</math> 4°</p> <p><math>\beta</math> = 45 <math>\pm</math> 8°</p> <p><math>\gamma</math> = 30 - 8°</p> <p><math>\delta</math> = 60 + 8°</p>	<p>Pump</p> <p>Dimension IV = - mm</p> <p>Dimension V = - mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 HAN 2,3a 1  
1. Edition

En

VA 3/100 H 1300 BR 129-1  
0 460 303 081

supersedes  
company: Hanomag  
engine: D 132

Setting of the pointer at a stroke of  
1,12 mm in relation to outlet "A".

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,3 mm

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	4,5-5,5 mm		
1.2 Supply pump pressure	1000	5,0-5,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	57,5-58,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	10,0-16,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 60,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1350	28,0-36,0 cm <sup>3</sup> /1000 strokes		

Testoil-ISO 4113

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min	550-700(520-730)	1000	1050-1200
	mm	Start	(4,2-5,8)	5,7-6,4(5,4-6,7)
2.2 Supply pump	rev/min	100	1000	1300
	kp/cm <sup>2</sup>	0,8-1,3(0,6-1,5)	(4,8-5,7)	5,9-6,4(5,7-6,6)
Overflow delivery	rev/min	500		1300
	cm <sup>3</sup> /10 s	mind. 25		55-125(40-140)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1390-1440 (1370-1460)	0	
		1350	(27,0-37,0)	
		1250	53,5-56,5 (52,5-57,5)	
		800	(57,0-59,0)	
		500	50,5-54,0 (49,5-55,0)	
	Stop	1300	0	
Idle stop	Full	340-390 (320-410)	0	
		300	(9,0-17,0)	
	Start	100	mind. 60,0	
End stop		300-550		

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = - mm</p> <p>Dimension V = - mm</p> <p>Dimension I = 7,0mm</p> <p>Dimension II = 6,5mm</p> <p>Dimension III = 27,8mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

46

En

WPP 001/4 DEE 2,5e 1  
1. Edition

VA 3/100 H 1050 BR 28-1

supersedes  
company:  
engine:

John Deere  
493 B

Plunger lift 1.72 mm referenced to outlet  
"A" in line with engine TDC position.

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,3 mm

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	600	6,9-7,9 mm		
1.2 Supply pump pressure	600	5,1-5,6 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	48,5-49,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	400	9,0-15,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	--	-- cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1110	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

	100-260(70-290) rev/min mm	Checking values in brackets	600	790-940
2.1 Timing device	Start	(6,6-8,2)	9,7-10,4(9,4-10,7)	
	100	600	1000	
2.2 Supply pump	1,7-2,2(1,5-2,4) rev/min kp/cm <sup>2</sup>	(4,9-5,8)	6,2-6,7(6,0-6,9)	
	500	1050		
Overflow delivery	mind.25 rev/min cm <sup>3</sup> /10 s	55-125(40-140)		

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1170-1260 (1150-1280)	0	
		1210	max. 3,0	
		1110	(25,0-35,0)	
		1000	(48,0-50,0)	
		500	41,5-45,5 (40,5-46,5)	
		100	mind.32,5	
	Stop	1050	0	
Idle stop	Full	470-530 (450-550)	0	
		400	(8,0-16,0)	
End stop	Start			

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Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4°	Pump Dimension IV = 3,0 mm
β = 30 ± 8°	Dimension V = - mm
γ = 30 - 8°	Dimension I = 7,0 mm
δ = 30 - 8°	Dimension II = 10,5 mm
ε = 60 + 8°	Dimension III = 26,8 mm

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 HAN 3,1 a 2  
1. Edition

En

VA 4/100 H 1700 BR 118-4  
0 460 304 107

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,1 mm

supersedes  
company: Hanomag  
engine: D 122 LS

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	6,4-7,4 mm		
1.2 Supply pump pressure	1100	5,4-5,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	53,5-54,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	10,0-16,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1810	22,0-28,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets	600-750(570-780)	1100	1350-1500
2.1 Timing device	rev/min mm	Start	(6,1-7,7)	10,7-11,4(10,4-11,7)	
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100	1100	1700	
Overflow delivery	rev/min cm <sup>3</sup> /10s	0,5-1,0(0,3-1,2)	(5,2-6,1)	7,3-7,8(7,1-8,0)	
			1500		
			85-155(70-170)		

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
Idle stop	full	1870-1920 (1850-1940) 1810 1680 1000 500	0 (21,0-29,0) 54,5-57,5 (53,5-58,5) (53,0-55,0) 48,0-52,0 (47,0-53,0)	
	Stop	1700	0	
Idle stop	Full	480-540 (460-560) 450 350	0 (2,0-8,0) (9,0-17,0)	
End stop	Start	100 300-550	mind.65,0	

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 45 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = - mm</p> <p>Dimension V = - mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 SAV 5,2 a 4

1. Edition

EN

VA 6/100 H 1300 BR 124-1  
0 460 306 067

supersedes  
company: Renault (Saviem)  
engine: 597-01

Pre-stroke setting 0,2 mm  
Plunger lift 0.3 mm at 23° BTDC

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	7,3-8,3 mm		
1.2 Supply pump pressure	1000	5,6-6,1 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	56,0-57,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	250	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.70,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1350	41,0-49,0 cm <sup>3</sup> /1000 strokes		

Testoil-ISO 4113

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	400-560(370-590) Start	1000 (7,0-8,6)	1120-1250 9,7-10,4(9,4-10,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100 0,9-1,4(0,7-1,6)	1000 (5,4-6,3)	1300 6,5-7,0(6,3-7,2)
Overflow delivery	rev/min cm <sup>3</sup> /10s	500 mind.25	1000 55-125(40-140)	1300 55-125(40-140)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1430-1480 (1410-1500) 1450 1350 1300 1000 500	0 max. 5,0 57,5-60,5 (56,5-61,5) (55,5-57,5) 47,5-51,0 (46,5-52,0)	
	Stop	1300	0	
Idle stop	Full	300-350 (280-370) 250 100	0 (11,0-19,0)	
End stop	Start	110-210	mind.70,0	

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Angle to the stop-plate	Pre-setting dimensions
<b>Pump</b>	
$\alpha$ = 25 $\pm$ 4°	Dimension IV = 5,0 mm
$\beta$ = 55 $\pm$ 8°	Dimension V = - mm
$\gamma$ = 30 - 8°	Dimension I = 7,0 mm
$\delta$ = 60 + 8°	Dimension II = 10,5 mm
	Dimension III = 35,3 mm

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 SAV 5,2a 5

1. Edition

VA 6/100 H 1500 BR 124-4  
0 460 306 150

supersedes  
company  
engine

Savim  
D 797.05

Setting of the pointer at a stroke of  
0,3 mm in relation to outlet "A".

Pre-stroke setting 0,2 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	6,5-7,5 mm		
1.2 Supply pump pressure	1000	5,9-6,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	58,5-59,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.75,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1610	26,0-34,0 cm <sup>3</sup> /1000 strokes		

Testoil-ISO 4113

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	420-570(390-600)	1000	1350-1440
		Start	(6,2-7,8)	12,7-13,4(12,4-13,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100	1000	1500
		0,9-1,4(0,7-1,6)	(5,7-6,6)	7,5-8,0(7,3-8,2)
Overflow delivery	rev/min cm <sup>3</sup> /10s	500		1500
		mind.25		55-155(40-170)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>3</sup>
End stop	Full	1630-1700 (1610-1720)	0	
		1650	max. 13,0	
		1610	(25,0-35,0)	
		1500	58,0-61,0 (57,0-62,0)	
		1000	(58,0-60,0)	
		500	49,0-52,0 (48,0-53,0)	
	Stop	1500	0	
Idle stop	Full	390-450 (370-470)	0	
		300	(6,0-14,0)	
		100	mind.75,0	
	Start	110-210		
End stop				

F15

EAS

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = - mm</p> <p>Dimension V = - mm</p>

**Testoil-ISO 4113**

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 SAV 3,0a 2

1. Edition

EN

VA 4/100 H 1600 BR 127  
0 460 304 056

\*\* See 3,0a 1

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,1 mm

supersedes  
company: Saviem  
engine: 599

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	4,8-5,8 mm		
1.2 Supply pump pressure	800	4,2-4,7 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	49,5-50,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	320	13,0-19,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.76,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1670	27,0-33,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min mm	350-500(320-530)	800	1400-1560
		Start	(4,5-6,1)	13,7-14,4(13,4-14,7)
		100	800	1500
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	0,8-1,3(0,6-1,5)	(4,0-4,9)	6,8-7,3(6,6-7,5)
		500	1500	1600
Overflow delivery	rev/min cm <sup>3</sup> /10 s	mind.25	55-155(40-170)	55-155(40-170)
2.3 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1730-1780 (1710-1800)	0  1670 1600 1000 500 500	(26,0-34,0) 43,5-46,5 (42,5-47,5) (49,0-51,0) 42,5-46,5 (41,5-47,5) 29,75-36,25(28,75-37,25)
	Stop	1600	0	
Idle stop	Full	390-440 (370-460)	0  (12,0-20,0)	
End stop	Start	315-325  100 110-210	mind.76,0	

Testoil-ISO 4113

F17

F17

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = - mm</p> <p>Dimension V = - mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 HAN 2,3a

2. Edition

En

VA 3/100 H 1300 BR 129  
0 460 303 080

Setting of the pointer at a stroke of  
1,12 mm in relation to outlet "A".

Pre-stroke setting 0,3 mm

supersedes  
company  
engine.

1.68  
Hanomag  
D 131

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	3,3-4,3 mm		
1.2 Supply pump pressure	1100	5,0-5,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	51,0-52,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	11,0-17,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.70,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1380	25,0-33,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min	750-850(720-880)	1100	1100-1200
	mm	Start	(3,0-4,6)	3,7-4,4 (3,4-4,7)
2.2 Supply pump	rev/min	100	1100	1300
	kp/cm <sup>2</sup>	0,6-1,1(0,4-1,3)	(4,8-5,7)	5,6-6,1(5,4-6,3)
Overflow delivery	rev/min	500	1000	1300
	cm <sup>3</sup> /10 s	mind.25	55-125(40-140)	55-125(40-140)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1430-1480 (1410-1500) 1380 1300 1000 600	0 (24,0-34,0) 50,5-53,5 (49,5-54,5) (50,5-52,5) 51,0-54,5 (50,0-55,5)	
	Stop	1300	0	
Idle stop	Full	420-480 (400-500) 300	0 (10,0-18,0)	
	Start	100	mind.70,0	
End stop		300-550		

Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
Pump	
$\alpha$ = 25 $\pm$ 4°	Dimension IV = - mm
$\beta$ = 40 $\pm$ 8°	Dimension V = - mm
$\gamma$ = 30 - 8°	Dimension = 7,0 mm
$\delta$ = 60 + 8°	Dimension = 4,5 mm
	Dimension = 25,8 mm

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

EN

46

WPP 001/4 HAN 3,1 f  
2. Edition

VA 4/100 H 1000 BR 56

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes 6.70  
company: Hanomag  
engine D 142

Pre-stroke setting 0,1 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	2,3-3,3 mm		
1.2 Supply pump pressure	800	4,5-5,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	54,5-55,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	11,0-17,0 cm <sup>3</sup> /1000 strokes		
1.5 Start (mech.)	100	mind.75,0 cm <sup>3</sup> /1000 strokes		3,0
1.6 Full-load speed regulation	1050	49,0-57,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min mm	530-650(500-680)	800	850-950
		Start	(2,0-3,6)	3,7-4,4(3,4-4,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100	800	1000
		1,1-1,6(0,9-1,8)	(4,3-5,2)	5,1-5,6(4,9-5,8)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500	1000	
		mind.25	55-125(40-140)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1120-1170 (1100-1190) 1050 980 800 500	0 (48,0-58,0) 52,5-55,5 (51,5-56,5) (54,0-56,0) 51,5-54,5 (50,5-55,5)	
	Stop	1000	0	
Idle stop	Full	370-450 (350-470) 300	0 (10,0-18,0)	
End stop	Start	100 mind.150	mind. 750	

Testoil-ISO 4113

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FEA:

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 5,5 mm</p> <p>Dimension V = - mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 HAN 3.1 c

3. Edition

En

VA 4/100 H 1150 BR 55

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes 4.69  
company Hanomag  
engine D 142 K

Pre-stroke setting 0,1 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	4,0-5,0 mm		
1.2 Supply pump pressure	1000	5,0-5,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	50,5-51,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,5-15,5 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start (autom.)	100	mind.75,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1200	33,0-41,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	600-750 (570-780)	1000	1020-1120
	mm	Start	(3,7-5,3)	4,7-5,4 (4,4-5,7)
2.2 Supply pump	rev/min	100	1000	1150
	kp/cm <sup>2</sup>	1,0-1,5 (0,8-1,7)	(4,8-5,7)	5,5-6,0 (5,3-6,2)
Overflow delivery	rev/min	500	1000	
	cm <sup>3</sup> /10 s	mind.25	55-125 (40-140)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1230-1280 (1210-1300)	0	
		1200	(32,0-42,0)	
		1130	47,5-50,5 (46,5-51,5)	
		800	(50,0-52,0)	
		500	49,0-52,0 (48,0-53,0)	
	Stop	1150	0	
Idle stop	Full	360-420 (340-440)	0	
		300	(8,5-16,5)	
		100	mind.75,0	
		500	max. 45,0	
End stop	Start			

Testoil-ISO 4113

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 7,0 mm</p> <p>Dimension V = - mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 5,1 e  
2. Edition

VA 6/100 H 1400 BR 57

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

supersedes 6.69  
company I H C  
engine D 310

Pre-stroke setting 0,4 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers  
Test Instructions and Test Equipment VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	5,8-6,8 mm		
1.2 Supply pump pressure	800	4,9-5,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1250	63,5-64,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	400	9,0-15,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start (mech.) 196bar	100	mind.85,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1500	27,0-35,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min mm	380-530(350-560)	800	1130-1280
		Start	(5,5-7,1)	11,7-12,4(11,4-12,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100	800	1400
		1,0-1,5(0,8-1,7)	(4,7-5,6)	6,9-7,4(6,7-7,6)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500	1000	
		mind.25	55-125(40-140)	

2.3 Fuel deliveries	Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full		1570-1800 (1550-1820)	0	
			1590	< 5,0	
			1500	(26,0-36,0)	
			1400	61,0-64,0 (60,0-65,0)	
			1250	(63,0-65,0)	
			500	57,0-60,0 (56,0-61,0)	
	Stop		1400	0	
Idle stop	Full		500-560 (480-580)	0	
			400	(8,0-16,0)	
			100	mind.85,0	
			500	mind.30,0-57,0	
	End stop		mind.180		

G1

G.1

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha</math> = 25 <math>\pm</math> 4°</p> <p><math>\beta</math> = 50 <math>\pm</math> 8°</p> <p><math>\gamma</math> = 30 - 8°</p> <p><math>\delta</math> = 60 <math>\pm</math> 8°</p>	<p><b>Pump</b></p> <p>Dimension IV = 2,5 mm (s.a.BMP 161/32)</p> <p>Dimension V = - mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

En

46

WPP 001/4 PER 5,8 L

1. Edition

VA 6/100 H 1400 BL 1

0 460 306 046

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm

supersedes  
company: Miko-Perkins  
engine: 6/354

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	750	3,0-3,8 mm		
1.2 Supply pump pressure	700	4,3-4,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	700	55,0-56,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	250	8,0-14,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.85,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1400	43,5-51,5 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min	550-630(520-660)	750	1300-1500
	mm	Start	(2,7-4,1)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100	700	1400
	kp/cm <sup>2</sup>	2,1-2,7(1,7-2,9)	(4,1-4,0)	7,0-7,5(6,8-7,7)
Overflow delivery	rev/min	500		1400
	cm <sup>3</sup> /10 s	mind.25		55-100(40-110)

2.3 Fuel deliveries	Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full		1560-1630 (1540-1650)	0	
			1400	(42,5-52,5)	
			1400	57,5-60,5 (56,5-61,5)	
			700	(54,5-56,5)	
			500	51,5-55,5 (50,5-56,5)	
	Stop		1400	0	
Idle stop	Full		280-330 (260-350)	0	
			250	(7,0-15,0)	
	Start		100	mind.85	
			500	max. 45	
End stop			mind.190		

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8.81

G3

63

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 63 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = - mm</p> <p>Dimension V</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

En

46

WPP 001/4 HAN 3,1 a

3. Edition

VA 4/100 H 1700 BR 118  
BR 118-2

supersedes  
company  
engine

c. v  
Hanomag  
D 141 L

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

0,1 mm  
Pre-stroke setting

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1300	5,5-6,5 mm		
1.2 Supply pump pressure	1300	6,0-6,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	47,5-48,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	10,0-16,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start (autom.)	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation			cm <sup>3</sup> /1000 strokes	

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	750-910(720-940)	1300	1450-1600
	Start	(5,2-6,8)	8,7-9,4(8,4-9,7)	
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100	1300	1700
	0,5-1,0(0,3-1,2)	(5,8-6,7)	7,1-7,6(6,9-7,8)	
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500	1500	
	mind.25	85-155(70-170)		

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1890-1960 (1870-1980)	0  1800 (25,0-35,0) 1700 44,5-47,5 (43,5-48,5) 1300 49,5-51,5 (48,5-52,5) 1000 (47,0-49,0) 500 43,5-46,5 (42,5-47,5)	
	Stop	1700	0	
Idle stop	Full	480-540 (460-560)	0  (9,0-17,0)	
End stop	Start	350  100 300-550	mind.65,0	

Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
<b>Pump</b> $\alpha = 25 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 45 - 8^\circ$ $\delta = 60 + 8^\circ$	<b>Pump</b> Dimension IV = 2,5 mm Dimension V = - mm Dimension I = 7,0 mm Dimension II = 9,0 mm Dimension III = 30,3 mm

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 SAV 5,2 a

3. Edition

VA 6/100 H 1450 BR 124  
0 460 306 048

supersedes 7.71  
company Saviem  
engine 597.02

Pre-stroke setting 0,2 mm  
Plunger lift 0.3 mm at 23° BTDC

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
- Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	6,7-7,7 mm		
1.2 Supply pump pressure	1000	5,9-6,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	60,0-61,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	250	21,0-27,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.75,0 cm <sup>3</sup> /1000 strokes		3,0
1.6 Full-load speed regulation	1560	26,0-34,0 cm <sup>3</sup> /1000 strokes		

Testoil-ISO 4113

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	420-570(390-600)	1000	1350-1440
		Start	(6,4-8,0)	12,7-13,4(12,4-13,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100	1000	1450
		0,9-1,4(0,7-1,6)	(5,7-6,6)	7,5-8,0(7,3-8,2)
Overflow delivery	rev/min cm <sup>3</sup> /10s	500		1450
		mind.25		85-155(70-170)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1600-1800 (1580-1820)	0	
		1650	max.5,0	
		1560	(25,0-35,0)	
		1450	53,0-56,0 (52,0-57,0)	
		1000	(59,5-61,5)	
		500	52,5-56,0 (51,5-57,0)	
	Stop	1450	0	
Idle stop	Full	340-390 (320-410)	0	
		300	max.9,0	
		250	(20,0-28,0)	
	Start	100	mind.75,0	
End stop		110-210		

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Angle to the stop-plate	Pre-setting dimensions
<b>Pump</b> $\alpha = 25 \pm 4^\circ$ $\beta = 60 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	<b>Pump</b> Dimension IV = 5,0 mm Dimension V = - mm Dimension I = 7,0 mm Dimension II = 12,0 mm Dimension III = 35,3 mm

**Testoil-ISO 4113**

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 HAN 3,1a 1

1. Edition

VA 4/100 H 1700 BR 118-1  
BR 118-3

supersedes  
company: Hanomag  
engine: D 142 L

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,1 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	6,4-7,4 mm		
1.2 Supply pump pressure	1100	5,4-5,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	55,0-56,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	10,0-16,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1810	22,0-28,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets				
2.1 Timing device	rev/min mm	600-750(570-780)	1100	1350-1500)
		Start	(6,1-7,7)	10,7-11,4(10,4-11,7)
		100	1100	1700
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	0,5-1,0(0,3-1,2)	(5,2-6,1)	7,3-7,8(7,1-8,0)
Overflow delivery	rev/min cm <sup>3</sup> /10 s		1500	
			85-155(70-170)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1870-1920 (1850-1940)	0 1810 1680 1000 500 55,0-58,0 (54,0-59,0) (54,5-56,5) 53,5-56,5 (52,5-57,5)	
	Stop	1700	0	
Idle stop	Full	480-540 (460-560)	0 (2,0-8,0)	
End stop	Start	450 100 300-550	mind.65,0	

Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 45 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump = 0,5 mm (s.a.BMP 161/32)</p> <p>Dimension IV = - mm</p> <p>Dimension I = 7,0 mm</p> <p>Dimension II = 11,0 mm</p> <p>Dimension III = 32,3 mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 HAN 3,1d 3

1. Edition

En

VA 4/100 H 1200 BR 58

supersedes  
company:  
engine:

Hanomag  
D 142

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,1 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	3,2-4,2 mm		
1.2 Supply pump pressure	900	5,1-5,6 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	57,0-58,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	20,0-26,0 cm <sup>3</sup> /1000 strokes		
1.5 Start (mech.)	100	mind.85,0 cm <sup>3</sup> /1000 strokes		3,0
1.6 Full-load speed regulation	1250	33,0-41,0 cm <sup>3</sup> /1000 strokes		

Testoil-ISO 4113

#### 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	600-730(570-760)	900	950-1050
	mm	Start	(2,9-4,5)	4,7-5,4(4,4-5,7)
2.2 Supply pump	rev/min	- 100	900	1200
	kp/cm <sup>2</sup>	0,9-1,4(0,7-1,6)	(4,9-5,8)	6,2-6,7(6,0-6,9)
Overflow delivery	rev/min	500	1000	
	cm <sup>3</sup> /10 s	mind.25	25-55(40-140)	

#### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1290-1340 (1270-1360) 1250 1180 800 500 1200	0 (32,0-42,0) 52,5-55,5 (51,5-56,5) (56,5-58,5) 57,0-60,0 (56,0-61,0) 0	
Idle stop	Full	400-460 (380-480) 300 100	0 (19,0-27,0) mind. 85,0	
End stop	Start			

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 1,5 mm (s.a.BMP)</p> <p>Dimension V = - mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 GUL 2,3b 2  
1. Edition

En

VA 3/100 H 1050 BR 111-1

0 460 303 074

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,1mm

supersedes  
company: Guldner  
engine: 3 L 76

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	4,9-5,9 mm		
1.2 Supply pump pressure	700	4,4-4,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure Full-load delivery with charge-air pressure	700 --	46,5-47,5 cm <sup>3</sup> /1000 strokes -- cm <sup>3</sup> /1000 strokes		2,5
1.4 Idle speed regulation	250	22,0-28,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.110,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1100	16,0-24,0 cm <sup>3</sup> /1000 strokes		3,0

Testoil-ISO 4113

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min mm	350-500(320-530)	700	850-1000
		Start	(4,6-6,2)	8,7-9,4(8,4-9,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100	700	1000
		0,8-1,3(0,6-1,5)	(4,2-5,1)	5,5-6,0(5,3-6,2)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500	1000	
		mind. 25	55-125(40-140)	

2.3 Fuel deliveries	Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full		1120-1160 (1100-1180)	0	
			1100	(15,0-25,0)	
			1000	47,5-50,5 (46,5-51,5)	
			700	(46,0-48,0)	
			500	44,5-47,4 (43,5-48,5)	
	Stop		1050	0	
Idle stop	Full		280-330 (260-350)	0	
			250	(15,0-25,0)	
	Start		100	mind.110,0	
End stop			130-230		

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 48 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = - mm</p> <p>Dimension V = - mm</p> <p><b>Dimensions for pre-setting</b></p> <p>Dimension I = 7,0 mm</p> <p>Dimension II = 9,0 mm</p> <p>Dimension III = 30,8 mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 STE 6,0f 2

1. Edition

VA 6/100 H 1150 BR 160  
0 460 306 107

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm

supersedes  
company  
engine:

Steyr  
WD 610-50

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	4,8-5,8 mm		
1.2 Supply pump pressure	800	4,5-5,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	60,5-62,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1250	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	300-450 (270-480)	800	
	mm	Start	(4,5-6,1)	
2.2 Supply pump	rev/min	100	800	1150
	kp/cm <sup>2</sup>	1,0-1,5 (0,8-1,7)	(4,3-5,2)	5,8-6,3 (5,6-6,5)
Overflow delivery	rev/min	500		1000
	cm <sup>3</sup> /10 s	mind. 25		55-125 (40-140)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1280-1340 (1260-1360)	0  1250 (25,0-35,0) 1100 (60,0-63,0) 900 60,5-62,5 (59,5-63,5) 500 59,0-62,0 (58,0-63,0)	
	Stop	1150	0	
Idle stop	Full	370-420 (350-440)	0  (6,0-14,0)	
End stop	Start	300 100 120-220	mind. 80,0	

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 2,5 mm</p> <p>Dimension V = - mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 STE 6,0e 1  
1. Edition

VA 6/100 H 1400 BR 160-1  
0 460 306 112

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0.3 mm

supersedes  
company: Steyr  
engine: WD 610

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	6,3-7,3 mm		
1.2 Supply pump pressure	1000	5,1-5,6 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1200	66,0-68,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	-	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,5-15,5 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1510	26,0-34,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min mm	340-490(310-520)	1000	1200-1350
		Start	(6,0-7,6)	8,7-9,4(8,4-9,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100	1000	1400
		0,9-1,4(0,7-1,6)	(4,9-5,8)	6,2-6,7(6,0-6,9)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500		1000
		mind. 25		55-125(40-140)
2.3 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1560-1620 (1540-1640)	0	
		1510	(25,0-35,0)	
		1350	62,5-64,5 (61,5-65,5)	
		1200	(65,5-68,5)	
		500	63,0-67,0 (62,0-68,0)	
	Stop	1400	0	
Idle stop	Full	430-510 (410-530)	0	
		300	(8,5-16,5)	
End stop	Start	100 120-220	mind. 90,0	

Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 50 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump = 3,0 mm</p> <p>Dimension IV = - mm</p> <p>Dimension V</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 FIA 1,9 c

2. Edition

En

VA 4/90 H 1900 BR 157  
0 460 394 006

supersedes 7.71  
company Fiat  
engine 237

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1300	7,3-8,3 mm		
1.2 Supply pump pressure	1300	4,5-5,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1500	33,0-34,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	320	10,0-16,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1950	16,0-24,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min mm	330-500(300-530)	1300	1720-1870
		Start	(7,0-7,6)	11,7-12,4(11,4-12,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100	1300	1850
		0,5-1,0(0,3-1,2)	(4,3-5,2)	5,9-6,4(5,7-6,6)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500		1500
		mind.25		55-125(40-140)

2.3 Fuel deliveries	Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	2080-2200 (2060-2220)	0		
		1950		(15,0-25,0)	
		1800		31,5-34,5 (30,5-35,5)	
		1500		(32,5-34,5)	
		500		28,5-32,0 (27,5-33,0)	
	Stop	1900	0		
Idle stop	Full	420-500 (400-520)	0		
		320		(9,0-17,0)	
	Start	100		mind.65,0	
End stop		200-300			

Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump = 1,5 mm</p> <p>Dimension IV = - mm</p> <p>Dimension V</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 STE 6,0 e

2. Edition

VA 6/100 H 1300 BR 153  
0 460 306 098

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,2 mm

supersedes 6.70  
company Steyr  
engine. W 610-01

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings		rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel		800	4,8-5,8 mm		
1.2 Supply pump pressure		800	4,5-5,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure		900	61,0-62,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure		--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation		350	7,0-13,0 cm <sup>3</sup> /1000 strokes		
1.5 Start		100	mind. 85,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation		1400	32,0-38,0 cm <sup>3</sup> /1000 strokes		

Testoil-ISO 4113

## 2. Test Specifications

300 450 (270 480) Checking values in brackets		800	1050-1200
2.1 Timing device	rev/min mm	Start (4,5-6,1)	7,7-8,4(7,4-8,7)
		100 800	1300
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	0,7-1,2(0,5-1,4) (4,3-5,2)	6,2-6,7(6,0-6,9)
		500 1000	
Overflow delivery	rev/min cm <sup>3</sup> /10 s	mind. 25 55-125(40-140)	

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1450-1530 (1430-1550)	0 max. 5,0 1400 1400 1300 1200 900 500	(31,0-39,0) (55,5-60,5) (59,5-63,5) (60,5-62,5) (56,0-62,0)
	Stop	1399	0	
Idle stop	Full	400-460 (380-480)	0 (6,0-14,0)	
	Start	350 100 130-230	mind. 85,0	
End stop				

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 22 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 3,5 mm</p> <p>Dimension V = - mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 SAV 2,5 d

2. Edition

En

VA 3/100 H 1250 BR 152  
0 460 303 090

supersedes 4.69  
company Saviem  
engine 714-30-01

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0.2 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	7,7-8,7 mm		
1.2 Supply pump pressure	900	5,3-5,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	52,5-53,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	34,0-42,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

2.1 Timing device	rev/min mm	380-530(350-560) Checking values in brackets	900	1050-1200
		Start	(7,5-8,9)	11,7-12,4(11,4-12,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100	900	1250
		0,8-1,3(0,6-1,5)	(5,1-6,0)	6,9-7,4(6,7-7,6)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500		1000
		mind. 25		55-125(40-140)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1370-1420 (1350-1440)	0	
		1300	(33,0-43,0)	
		1200	56,0-59,0 (55,0-60,0)	
		900	(52,0-54,0)	
		500	47,5-50,5 (46,5-51,5)	
	Stop	1250	0	
Idle stop	Full	340-410 (320-430)	0	
		300	(6,0-14,0)	
End stop	Start	100		
		110-210	mind. 65,0	

Testoil-ISO 4113

H1

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H1

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 3,0 mm (s.a.BMP)</p> <p>Dimension V = - mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 HAN 4,7a 5

1. Edition

En

VA 6/100 H 1700 BR 151-2  
0 460 306 134

supersedes  
company  
engine

Hanomag  
D 162 L

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm

All test specifications are valid for  
Bosch Fuel injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	5,5-6,5 mm		
1.2 Supply pump pressure	1100	4,7-5,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	52,5-53,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	11,0-17,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1800	31,0-39,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	610-760(580-790) Start	1100 (5,2-6,8)	1470-1620 11,7-12,4(11,4-12,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100 0,9-1,4(0,7-1,6)	1100 (4,5-5,4)	1700 6,4-6,9(6,2-7,1)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 mind. 25		1500 85-125(70-140)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1890-1940 (1870-1960) 1800 1680 1000 500	0 (30,0-40,0) 49,0-53,0 (48,0-54,0) (52,0-54,0) 48,5-52,5 (47,5-53,5)	
	Stop	1700	0	
Idle stop	Full	530-600 (510-620) 350	0 (10,0-18,0)	
	Start	100 150-250	mind. 65,0	
End stop				

Testoil-ISO 4113

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H3

H3

HAN 4,7 a 5

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = - mm</p> <p>Dimension V = - mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

En

46

WPP 001/4 HAN 4,7a 4  
1. Edition

VA 6/100 H 1700 BR 151-1  
0 460 306 132

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes  
company: Hanomag  
engine: D 162 LS

Pre-stroke setting 0,3 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	5,5-6,5 mm		
1.2 Supply pump pressure	1500	4,7-5,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	50,5-51,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	11,0-17,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1800	31,0-39,0 cm <sup>3</sup> /1000 strokes		

Testoil-ISO 4113

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min mm	610-760 (580-790)	1100	1470-1620
		Start (5,2-6,8)	0	
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100 0,9-1,4 (0,7-1,6)	1500 (4,5-5,4)	1700 6,4-6,9 (6,2-7,1)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 mind. 25	1500 85-125 (70-140)	

2.3 Fuel deliveries	Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full		1890-1940 (1870-1960)	0	
			1800	(30,0-40,0)	
			1680	48,5-51,5 (47,5-52,5)	
			1000	(50,0-52,0)	
			500	45,0-49,0 (44,0-50,0)	
	Stop		1700	0	
Idle stop	Full		530-600 (510-620)	0	
			350	(10,0-18,0)	
	Start		100	mind. 65,0	
End stop			150-250		

H5

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H5

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 5,0 mm</p> <p>Dimension V = - mm</p>

Testoil-ISO 4113

En

H6

H6

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

En

46

WPP 001/4 HAN 4,7 a 3

1. Edition

VA 6/100 H 1700 BR 151  
0 460 306 095

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes

company Hanomag

engine LKW D 162 L

Pre-stroke setting 0,3 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	5,5-6,5 mm		
1.2 Supply pump pressure	1100	4,7-5,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	52,5-53,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	11,0-17,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind. 65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1800	31,0-39,0 cm <sup>3</sup> /1000 strokes		3,0

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	610-760 (580-790) Start	1100 (5,2-6,8)	1470-1620 11,7-12,4 (11,4-12,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100 0,9-1,4 (0,7-1,6)	1100 (4,5-5,4)	1700 6,4-6,9 (6,2-7,1)
Overflow delivery	rev/min cm <sup>3</sup> /10s	500 mind. 25		1500 85-125 (70-140)
2.3 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1890-1940 (1870-1960) 1800 1680 1000 500	0 (30,0-40,0) 49,0-53,0 (48,0-54,0) (52,0-54,0) 48,5-52,5 (47,5-53,5)	
	Stop			
Idle stop	Full	530-600 (510-620) 350	0 (10,0-18,0)	
	Start	100 150-250	mind. 65,0	
End stop				

Testoil-ISO 4113

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H7

H7

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 - 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 5,0 mm (s.a.BMP 161/32)</p> <p>Dimension V = - mm</p>

Testoil-ISO 4113

En

H8

H3

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 STE 6,0f  
2. Edition

En

VA 6/100 H 1100 BR 150  
0 460 306 086

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm

supersedes 6.70  
company: Steyr  
engine: WD 610 t

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	5,8-6,8 mm		
1.2 Supply pump pressure	800	4,7-5,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	52,5-54,5 cm <sup>3</sup> /1000 strokes		
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	280	15,0-21,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1190	26,0-34,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1 Timing device	mm	340-460 (310-490)	800	900-1060
	rev/min	Start	(5,5-7,1)	8,7-9,4 (8,4-9,7)
2.2 Supply pump	kp/cm <sup>2</sup>	100	800	1100
	rev/min	1,0-1,5 (0,8-1,7)	(4,5-5,4)	5,8-6,3 (5,6-6,5)
Overflow delivery	cm <sup>3</sup> /10 s	500		1000
		mind. 25		55-125 (40-140)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1250-1310 (1230-1330)	0	
		1190	54,5-56,5 (25,0-35,0)	
		1050	54,5-56,5 (53,5-57,5)	
		800	54,5-56,5 (52,0-55,0)	
		500	57,5-60,5 (56,5-61,5)	
	Stop	1100	0	
Idle stop	Full	360-420 (340-440)	0	
		280	(11,0-22,0)	
	Start	100	mind. 80,0	
End stop		130-230		

Testoil-ISO 4113

H9

H3

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 60 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 5,5 mm</p> <p>Dimension V = - mm</p>

**Testoil-ISO 4113**

En

**H10**

H10

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 HAN 3,1c 5

1. Edition

VA 4/100 H 1150 BR 148  
0 460 091

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,1 mm

supersedes  
company: Hanomag  
engine: D 142 K

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	4,1-5,1 mm		
1.2 Supply pump pressure	1000	5,1-5,6 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	50,0-51,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	-	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,5-15,5 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1200	33,0-41,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min mm	600-750(570-780)	1000	1020-1120
		Start	(3,8-5,4)	4,7-5,4(4,4-5,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100 1,1-1,6(0,9-1,8)	1000 (4,9-5,8)	1150 5,6-6,1(5,4-6,3)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 mind.25		1000 55-125(40-140)

2.3 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1230-1280 (1210-1300)	0	
		1200	(32,0-42,0)	
		1130	47,5-50,5 (46,5-51,5)	
		800	(49,5-51,5)	
		500	49,0-52,0 (48,0-53,0)	
	Stop	1150	0	
Idle stop	Full	360-420 (340-440)	0	
		300	(8,5-16,5)	
	Start	100	mind.65,0	
End stop		110-210		

Testoil ISO 4113

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H11

114

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 + 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV= 7,0 mm (s.a.BMP)</p> <p>Dimension V= - mm</p>

# Test Specifications Distributor-Type Fuel Injection Pump

46

En

WPP 001/4 HAN 2,3f

1. Edition

VA 3/100 H 1700 CR 73-1  
0 460 303 124

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm

supersedes

company: Hanomag  
engine: D 132 H1-TMC

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1300	3,8-4,6 mm		
1.2 Supply pump pressure	1300	5,9-6,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1200	72,0-75,0 cm <sup>3</sup> /1000 strokes		
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	--	-- cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.70,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1800	22,0-28,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	640-700(610-730)	1300	1510-1660
		Start	(3,5-4,9)	6,7-7,4(6,4-7,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200	1300	1700
		1,4-1,9(1,2-2,1)	(5,7-6,6)	7,2-7,7(7,0-7,9)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500		1700
		55-100(40-110)		55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1860-1930 (1840-1950)	0	
		1800	(21,0-29,0)	
		1650	73,5-75,5 (72,5-76,5)	
		1200	(71,5-75,5)	
		500	67,0-71,0 (66,0-72,0)	
	Stop	1700	0	
Idle stop	Full			
	Start	100	mind.70,0	
End stop		150-250		

Testoil-ISO 4113

H13

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H13

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 60 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = - mm</p> <p>Dimension V = - mm -</p>

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 PEU 2,0g

2. Edition

En

VA 4/90 H 2250 CR 165

0 460 394 011

supersedes  
company  
engine

12.74  
Peugeot  
XD 4/88

Pre-stroke setting 0 mm  $\pm 0,02$  ( $\pm 0,04$ )

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	2000	5,9-6,3	mm	
1.2 Supply pump pressure	2000	6,0-6,5	kp/cm <sup>2</sup>	
1.3 Full-load delivery without charge-air pressure	1000	27,5-28,5	cm <sup>3</sup> /1000 strokes	2,5
Full-load delivery with charge-air pressure	--	--	cm <sup>3</sup> /1000 strokes	
1.4 Idle speed regulation	300	14,0-20,0	cm <sup>3</sup> /1000 strokes	3,0
1.5 Start	100	mind. 50,0	cm <sup>3</sup> /1000 strokes	
1.6 Full-load speed regulation	2350	13,0-19,0	cm <sup>3</sup> /1000 strokes	

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min	700-900(670-930)	2000	2300-2450
	mm	Start	(5,6-6,6)	7,8-8,5(7,5-8,8)
2.2 Supply pump	rev/min	200	2000	2250
	kp/cm <sup>2</sup>	1,0-1,5(0,8-1,7)	(5,8-6,7)	6,6-7,1(6,4-7,3)
Overflow delivery	rev/min	500		2250
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

2.3 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	2550-2650 (2530-2670)	0	
		2450	max. 5,0	
		2350	(12,0-20,0)	
		2200	(26,0-31,0)	
		1000	(27,0-29,0)	
		600	(21,5-27,5)	
	Stop	2250	0	
Idle stop	Full	340-400 (320-420)	0	
		300	(13,0-21,0)	
		100		
End stop	Start	150-250	mind. 50,0	

Testoil-ISO 4113

H15

HAS

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 29 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 12 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 2,0 mm</p> <p>Dimension V = 29,1 mm</p>

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 STE 6,0g 3

1. Edition

En

VA 6/100 H 1150 CR 167  
0 460 306 156

supersedes  
company:  
engine:

Steyr  
WD 610-40

Pre-stroke setting 0,3 mm  $\pm 0,02$  ( $\pm 0,04$ )

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	3,1-3,9 mm		
1.2 Supply pump pressure	900	4,9-5,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	59,5-60,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	250	15,0-21,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1240	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min mm	400-550(370-580)	900	1030-1170
	Start		(2,8-4,2)	4,2-4,9(3,9-5,2)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200	900	1150
	1,5-2,0(1,3-2,2)		(4,7-5,6)	5,7-6,2(5,5-6,4)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500		1150
	55-100(40-110)			55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1300-1420 (1280-1440) 1300 1240 1100 900 500	0 max. 15,0 (25,0-35,0) (59,1-61,0) 57,5-59,5 (56,5-60,5) 58,0-61,0 (57,0-62,0)	
	Stop	1150	0	
Idle stop	Full	320-400 (300-420) 250 100	0 (14,0-22,0)	
End stop	Start	120-220	mind.90,0	

Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 30 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 2,6 mm</p> <p>Dimension V = 24,6 mm</p>

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 MAN 3,3a 1

1. Edition

En

VA 6/100 H 1500 CR 181-1  
0 460 306 198

superseded  
company MAN  
engine D 0216 MXUL

Pre-stroke setting  $0,5 \text{ mm} \pm 0,02 (\pm 0,04)$

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

ISO 4113  
TECHNISCHE  
DOKUMENTATION

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	2,8-3,8 mm		
1.2 Supply pump pressure	800	4,6-5,1 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	57,5-58,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1600	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	400-520(370-550)	800	1200	1310-1440
	Start		(2,5-4,1) 5,6-6,6(5,3-6,9)	6,9-7,6(6,6-7,9)	
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200	800		1500
		1,6-2,1(1,4-2,3) (4,4-5,3)			7,2-7,7(7,0-7,9)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500			1500
		55-100(40-110)			55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1630-1730 (1610-1750) 1600 1500-1540 1480 900 500	0 (25,0-35,0) Start 58,5-61,5 (57,5-62,5) (57,0-59,0) 47,5-52,5 (46,5-53,5)	
	Stop	1500	0	
Idle stop	Full	400-460 (380-480) 300	0 (11,0-19,0)	
	Start	100	mind. 80,0	
End stop		110-210		

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 4,0 mm</p> <p>Dimension V = 24,6 mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 MAN 3,3b

3. Edition

En

VA 6/100 H 1500 CR 181-2  
0 460 306 216

supersedes 12.78  
company: MAN  
engine: D 0216 MXUL

Testoil-ISO 4113

Pre-stroke setting **0,5 mm  $\pm 0,02$  ( $\pm 0,04$ )**

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 181/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	4,7-5,7 mm		
1.2 Supply pump pressure	1000	5,5-6,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1200	59,0-60,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1600	29,5-35,5 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	500 1,3-2,3(1,0-2,6) (4,4-6,0) 6,3-7,3(6,0-7,6) 7,0-7,7(6,7-8,0)	1000	1300	1500
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200 1,7-2,2(1,5-2,4)		1000 5,5-6,0(5,3-6,2) 7,1-7,6(6,9-7,8)	1500
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 55-100(40-110)			1500 55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1670-1730 (1650-1750) 1600 1480 1200 500	0 (28,5-36,5) 57,0-60,0 (56,0-61,0) (58,5-60,5) 44,5-48,5 (43,5-49,5)	
	Stop	1500	0	
Idle stop	Full	400-460 (380-480) 300	0 (11,0-19,0)	
	Start	100	mind. 80,0	
End stop		110-210		

Angle to the stop-plate	Pre-setting dimensions
<b>Pump</b> $\alpha = 25 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	<b>Pump</b> Dimension $\bar{IV}$ 3,00 mm Dimension $\bar{V}$ 24,65 mm

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 CIT 2,1 d

5. Edition

En

2.78

supersedes Citroen  
company CRD 90 L  
engine

VA 4/90 H 2250 CL 186  
0 460 394 031

Pre-stroke setting 0 mm  $\pm 0,02$  ( $\pm 0,04$ )

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1400	4,3-4,7	mm	
1.2 Supply pump pressure	1400	4,5-5,0	kp/cm <sup>2</sup>	
1.3 Full-load delivery without charge-air pressure	1500	39,5-40,5	cm <sup>3</sup> /1000 strokes	2,5
Full-load delivery with charge-air pressure	--	--	cm <sup>3</sup> /1000 strokes	
1.4 Idle speed regulation	400	10,0-14,0	cm <sup>3</sup> /1000 strokes	
1.5 Start	100	mind.58,0	cm <sup>3</sup> /1000 strokes	3,0
1.6 Full-load speed regulation	1550	9,0-15,0	cm <sup>3</sup> /1000 strokes	

2. Test Specifications	Checking values in brackets	Start
2.1 Timing device	rev/min mm	375-525(345-555) 700 1400 1800 2050-2200 0,8-1,8(0,5-2,1) (4,0-5,0) 6,1-7,1(5,8-7,4) 7,0-7,7(6,7-8,0)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200 1400 2250 1,3-1,8(1,1-2,0) (4,3-5,2) 6,7-7,2(6,5-7,4)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 2250 55-100(40-110) 55-100(40-110)

2.3 Fuel deliveries	Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full		2850 2550 2400 2230 1500 600	< 4,0 (8,0-16,0) 21,0-27,0 (20,0-28,0) 31,75-34,25 (30,75-35,25) (39,0-41,0) 33,0-36,5 (32,0-37,5)	
		Stop	2250	0	
Idle stop	Full		600-750 (580-770) 400	0 (8,0-16,0)	
		Start	100	mind.58,0	
End stop			150-250		

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J13

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 48 \pm 8^\circ</math></p> <p><math>\gamma</math></p> <p><math>\delta</math></p>	<p>Pump</p> <p>Dimension IV = 1,50 mm</p> <p>Dimension V = 29,15 mm</p>

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 SAV 3,3c

2. Edition

En

VA 6/100 H 1500 CR 182  
0 460 306 203

supersedes 5.75  
company Saviem  
797-05

Pre-stroke setting 0,5 mm  $\pm$  0,02 ( $\pm$  0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	2,8-3,8 mm		
1.2 Supply pump pressure	800	4,6-5,1 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	57,5-58,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	11,0-19,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1600	26,0-34,0 cm <sup>3</sup> /1000 strokes		

Testoil-ISO 4113

## 2. Test Specifications

		Checking values in brackets			
2.1 Timing device	rev/min mm	400-520(370-550)	800	1200	1310-1440
		Start	(2,5-4,1)	5,6-6,6(5,3-6,9)	6,9-7,6(6,6-7,9)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200	800		1500
		1,6-2,1(1,4-2,3)	(4,4-5,3)		7,2-7,7(7,0-7,9)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500			1500
		55-100(40-110)			55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1630-1730 (1610-1750) 1600 1510-1540 1480 900 500	0 (25,0-35,0) Start 58,5-61,5 (57,5-62,5) (57,0-59,0) 47,5-52,5 (46,5-53,5)	
	Stop	1500	0	
Idle stop	Full	400-460 (380-480) 300	0 (10,0-20,0)	
	Start	100	mind. 80,0	
End stop		110-210		

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J15

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 4,0 mm</p> <p>Dimension V = 24,6 mm</p>

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 5,81

3. Edition

En

VA 6/10 H 1500 CR 189  
CR 189 P

0 460 306 212

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,4 mm  $\pm$  0,02 ( $\pm$  0,04)

supersedes 3.80  
company IHC  
engine D 358

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	5,3-6,1 mm		
1.2 Supply pump pressure	1000	5,5-6,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	65,0-66,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	330	13,0-21,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 75,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1650	26,0-34,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets			
2.1 Timing device	rev/min mm	500	1000	1200	1500
	Start	1,2-2,2(0,9-2,5)(5,0-6,4)	6,1-7,1(5,8-7,4)	7,0-7,7(6,7-7,9)	
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200	1000		1500
		1,9-2,4(1,7-2,6) (5,3-6,2)			7,4-7,9(7,2-8,1)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500			1500
		55-100(40-110)			55-100(40-110)

2.3 Fuel deliveries	Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full		1690-1740 (1670-1760)	0	
			1650	(25,0-35,0)	
			1500	65,5-68,5 (64,5-69,5)	
			800	(64,5-66,5)	
			500	61,5-65,5 (60,5-66,5)	
	Stop		1500	0	
Idle stop	Full		430-480 (410-500)	0	
			330	(12,0-22,0)	
			100	mind. 75,0	
End stop	Start		260-360		

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 50 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 3,00 mm</p> <p>Dimension V = 24,65 mm</p>

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 5,8q 2

1. Edition

VA 6/10 H 1500 CR 405  
CR 405 P

0 460 306 246

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,4 mm

supersedes 5.79  
company IHC  
engine D 358

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	5,3-6,1 mm		
1.2 Supply pump pressure	1000	5,5-6,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	65,0-66,0 cm <sup>3</sup> /1000 strokes		3,0
Full load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	330	14,0-20,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.75,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1650	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

2.1 Timing device	rev/min mm	Checking values in brackets			
		500	1000	1200	1500
	Start	1,2-2,2(0,9-2,5)	(5,0-6,4)	6,1-7,1(5,8-7,4)	7,0-7,7(6,7-8,0)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200	1000		1500
		1,9-2,4(1,7-2,6)	(5,3-6,2)		7,4-7,9(7,2-8,1)
Overflow delivery	rev/min cm <sup>3</sup> /10s	500			1500
		55-100(40-110)			55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1690-1740 (1670-1760) 1650 1500 800	0 (25,0-35,0) 65,5-68,5 (64,5-69,5) (64,5-66,5)	
	Stop	1500	0	
Idle stop	Full	430-480 (410-500) 330 100	0 (13,0-21,0)	
End stop	Start	260-360	mind.75,0	

Testoil-ISO 4113

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = - \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 3,00 mm</p> <p>Dimension V = 24,65 mm</p>

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

En

46

WPP 001/4 IHC 5,8a 3

1. Edition

VA 6/100 H 1400 CR 19-1

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes  
company: IHC  
engine: D 358

Pre-stroke setting 0,4 mm  $\pm$  0,04

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	5,0-5,8 mm		
1.2 Supply pump pressure	1000	5,8-6,3 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1200	69,5-70,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	250	22,0-28,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.84,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1500	31,0-39,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	250-380(220-410)	400	1000	1400
	Start	0,3-1,3(0-1,6)	(4,7-6,1)	6,9-7,6(6,6-7,9)	
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200		1000	1400
		2,0-2,5(1,8-2,7)		(5,6-6,5)	7,3-7,8(7,1-8,0)
Overflow delivery	rev/min cm <sup>3</sup> /10s	500			1400
		55-100(40-110)		55-100(40-110)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1550-1620 (1530-1640) 1500 1410-1430 1350 1200 500	0  Start 67,5-70,5 (66,5-71,5) (69,0-71,0) 59,0-63,0 (58,0-64,0)	
	Stop	1400	0	
Idle stop	Full	360-420 (340-440) 250	0  (21,0-29,0)	
	Start	100	mind.84,0	
End stop		220-300		

Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 2,0 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

En

J22

J22

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 CIT 2,6a

1. Edition

VA 4/90 H 2000 CR 406  
CR 406 P  
0 460 394 043

supersedes  
company: Citroen  
engine: CR D 93 B

Pre-stroke setting 0 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1400	5,3-5,7 mm		
1.2 Supply pump pressure	1400	4,8-5,3 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1200	44,0-45,0 cm <sup>3</sup> /1000 strokes		
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	400	7,0-11,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.58,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	2200	22,0-28,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets	700	1400	1800
2.1 Timing device	rev/min mm	Start	1,9-1,9(0,6-2,2)	(5,0-6,0)	7,1-8,1(6,8-8,4)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>		200	1400	200
Overflow delivery	rev/min cm <sup>3</sup> /10 s		1,3-1,8(1,1-2,0)	(4,6-5,5)	6,4-6,9(6,2-7,1)
			500		2000
			55-100(40-110)		55-100(40-110)

2.3 Fuel deliveries	Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full		2400 2300 2200 2000 1200 600	max. 6,0 (8,0-14,0) (7,0-15,0) (21,0-29,0) 37,5-39,5 (36,5-40,5) (43,5-45,5) 39,3-42,3 (38,3-43,3)	
	Stop		2000	0	
Idle stop	Full		600-670 (580-690) 400 300	0 (6,0-12,0) 15,0-27,0 (14,0-28,0)	
	Start		100	mind.58,0	
End stop			110-220		

Testoil-ISO 4113

J23

J23

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 16 \pm 4^\circ</math></p> <p><math>\delta = --</math></p>	<p><b>Pump</b></p> <p>Dimension IV = -- mm</p> <p>Dimension V = 24,65 mm</p>

**Testoil-ISO 4113**

En

**J24**

J24

# Test Specifications Distributor-Type Fuel Injection Pump

46

En

WPP 001(4 HAN 4,7 b 2

1. Edition

VA 6/100 H 1100 CR 75-2  
0 460 306 145

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes  
company Hanomag  
engine D 162 H 1-TMC

Pre-stroke setting 0,3 mm  $\pm 0,02 (\pm 0,04)$

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	1,3-2,1 mm		
1.2 Supply pump pressure	900	4,3-4,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	49,5-50,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1180	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets				
2.1 Timing device	rev/min	580-700(550-730)	900	1000-1100
	mm	Start	(1,0-2,4)	2,6-2,3(2,3-3,6)
2.2 Supply pump	rev/min	100	900	1100
	kp/cm <sup>2</sup>	1,4-1,9(1,2-2,1)	(4,1-5,0)	4,8-5,3(4,6-5,5)
Overflow delivery	rev/min	500		1100
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1210-1270 (1190-1290) 1180 1100 1000 500	0 (25,0-35,0) 51,5-53,5 (50,4-54,5) (49,0-51,0) 44,5-47,5 (43,5-48,5)	
	Stop	1100	0	
Idle stop	Full	370-430 (350-450) 300	0 (11,0-19,0)	
	Start	100	mind.65,0	
End stop		150-250		

Testoil-ISO 4113

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K1

K1

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 3,5 mm</p> <p>Dimension V = 24,6 mm</p>

**Testoil-ISO 4113**

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 5,8 e

3. Edition

En

VA 6/100 H 1250 CR 76  
0 460 306 147

supersedes 7.73  
company IHC  
engine D 358

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm  $\pm$  0,04

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	3,8-4,8 mm		
1.2 Supply pump pressure	900	5,0-5,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	67,0-68,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	250	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	36,0-44,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

2.1 Timing device	rev/min mm	350-500(320-530) Checking values in brackets	900	1100-1250
		Start (3,5-5,1)	6,1-6,8(5,8-7,1)	
		200 900	1250	
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	1,5-2,0(1,3-2,2)	(4,8-5,7)	6,2-6,7(6,0-6,9)
		500		1250
Overflow delivery	rev/min cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1390-1450 (1370-1470)	0	
		1300	(35,0-45,0)	
		1200	64,0-67,0 (63,0-68,0)	
		800	(66,5-68,5)	
		500	64,5-67,5 (63,5-68,5)	
	Stop	1250	0	
Idle stop	Full	380-430 (360-450)		
		250	(11,0-19,0)	
	Start	100	mind.90,0	
End stop		220-320		

Testoil-ISO 4113

K3

N3

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 1,0 mm</p> <p>Dimension V = 24,6 mm</p>

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 5,8e 1

1. Edition

VA 6/100 H 1150 CR 76 - 1  
0 460 906 179

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm  $\pm$  0,04

supersedes IHC  
company: D 358  
engine:

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	3,0-4,0 mm		
1.2 Supply pump pressure	700	4,4-4,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	69,5-70,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	475	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1200	36,0-44,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

2.1 Timing device	rev/min mm	Checking values in brackets			
		350-400(320-430)	700	900	950-1100
	Start	(2,7-4,3)	4,6-5,6(4,3-5,9)	6,1-6,8(5,8-7,1)	
		100	700		1150
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	1,8-2,3(1,6-2,5)	(4,2-5,1)	6,0-6,5(5,8-6,7)	
		500			1150
Overflow delivery	rev/min cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1270-1320 (1250-1340) 1200 1150-1170 1100 800 500	0  Start 68,5-71,5 (67,5-72,5) (69,0-71,0) 66,0-69,0 (65,0-80,0)	
	Stop	1150	0	
Idle stop	Full	575-725 (555-745) 475 100	0   mind. 90,0	
End stop	Start	220-300	(11,0-19,0)	

Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 50 \pm 8^\circ</math></p> <p><math>\gamma = 30 \pm 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 1,0 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

En

K6

K6

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 HAN 2,3 g

1. Edition

VA 3/100 H 1100 CR 73-2  
0 460 309 120

Setting of the pointer at a stroke of  
1,12 mm in relation to outlet "A".

supersedes  
company  
engine: Hanomag  
D 132 H1

Pre-stroke setting 0,3 mm  $\pm$  0,02 (+ 0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	1,5-2,3 mm		
1.2 Supply pump pressure	900	4,3-4,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	53,0-54,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1200	26,0-34,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min	600-730(570-760)	900	1030-1120
	mm	Start	(1,2-2,6)	2,5-3,2(2,2-3,5)
2.2 Supply pump	rev/min	200	900	1100
	kp/cm <sup>2</sup>	1,3-1,8(1,1-2,0)	(4,1-5,0)	4,9-5,4(4,7-5,6)
Overflow delivery	rev/min	500		1100
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

2.3 Fuel deliveries	Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
	End stop	Full	1220-1270 (1200-1290)	0	
			1200	(25,0-35,0)	
			1100	54,0-56,0 (53,0-57,0)	
			1000	(52,5-54,5)	
			500	49,5-52,5 (48,5-53,5)	
		Stop	1100	0	
	Idle stop	Full	370-430 (350-450)	0	
			300	(11,0-19,0)	
			100	mind.65,0	
	End stop	Start	150-250		

Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 4,0 mm</p> <p>Dimension V = 24,6 mm</p>

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 HAN 3,1 g

2. Edition

En

VA 4/100 H 1400 CR 74  
0 460 304 155

supersedes 5.72  
company Hanomag  
engine D 142 H-TMC

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,1 mm  $\pm$  0,02 ( $\pm$  0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1200	3,1-3,9 mm		
1.2 Supply pump pressure	1200	5,4-5,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	56,0-57,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	14,0-20,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1500	26,0-34,0 cm <sup>3</sup> /1000 strokes		3,0

## 2. Test Specifications

		Checking values in brackets	620-820 (590-850)	1200	1300-1410
2.1 Timing device	rev/min mm	Start	(2,8-3,2)	4,3-5,0 (4,0-5,3)	
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200	1200	1400	
		1,3-1,8 (1,1-2,0)	(5,2-6,1)	6,0-6,5 (5,8-6,7)	
Overflow delivery	rev/min cm <sup>3</sup> /10s	500		1400	
		55-100 (40-110)		55-100 (40-110)	

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1560-1620 (1540-1640) 1500 1400 1000 500	0 (25,0-35,0) 57,0-60,0 (56,0-61,0) (55,5-57,5) 52,0-56,0 (51,0-57,0)	
	Stop	1400	0	
Idle stop	Full	380-450 (360-470) 300	0 (13,0-21,0)	
End stop	Start	100 150-250	mind.80,0	

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K9  
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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 50 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 4,0 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

En

K10

K10

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

En

46

WPP 001/4 HAN 3,1 g 1

1. Edition

VA 4/100 H 1700 CR 74-1

0 460 304 158

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,1 mm  $\pm$  0,02(+ 0,04)

supersedes

company: Hanomag  
engine: D 142 H 2-TMC

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1200	4,6-5,4 mm		
1.2 Supply pump pressure	1200	5,4-5,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	51,5-52,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	14,0-20,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind. 70,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	--	-- cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min min	520-670(490-700) Start	1200 (4,3-5,7)	1340-1450 6,1-6,8(5,8-7,1)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200 1,3-1,8(1,1-2,0)	1200 (5,2-6,1)	1700 6,9-7,4(6,7-7,6)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 55-100(40-110)		1700 55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1780-1850 (1760-1870) 1690-1710 1650 1000 500	0 Start 48,0-51,0 (47,0-52,0) (51,0-53,0) 47,0-51,0 (46,0-52,0)	
	Stop	1700	0	
Idle stop	Full	380-450 (360-470) 300	0 (13,0-21,0)	
	Start	100	mind. 70,0	
End stop		150-250		

Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 2,0 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

En

K12

K12

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 HAN 3,1 g 2

1. Edition

En

VA 4/100 H 1100 CR 74 - 2

0 460 304 168

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,1 mm  $\pm$  0,02 ( $\pm$  0,04)

supersedes

company Hanomag

engine: D 141 H 1 - TMC

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers

Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	1,4-2,2 mm		
1.2 Supply pump pressure	900	4,5-5,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	56,5-57,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.70,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1250	6,0-14,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	650-800(620-830)	900	950-1100
	Start		(1,1-2,5)	2,4-3,1(2,1-3,4)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200	900	1100
	1,4-1,9(1,2-2,1)		(4,3-5,2)	5,2-5,7(5,0-5,9)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500		1100
	55-100(40-110)			55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1260-1330 (1240-1350)	0	
		1250	(5,0-15,0)	
		1080	56,5-59,5 (55,5-60,5)	
		900	(56,0-58,0)	
		500	54,5-57,5 (53,5-58,5)	
	Stop	1100	0	
Idle stop	Full	330-390 (310-410)	0	
		300	(6,0-14,0)	
	Start	100	mind.70,0	
End stop		150-250		

Testoil-ISO 4113

K13

K13 /

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 3,5 mm</p> <p>Dimension V = 24,6 mm</p>

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 HAN 4,7 b

2. Edition

supersedes 5.72  
company: Hanomag  
D 162 H-TMC  
engine.

VA 6/100 H 1400 CR 75  
0 460 306 138

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm  $\pm$  0,02 ( $\pm$  0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1200	3,2-4,0 mm		
1.2 Supply pump pressure	1200	5,3-5,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	51,5-52,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	17,0-23,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1500	31,0-39,0 cm <sup>3</sup> /1000 strokes		

Testoil-ISO 4113

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min	580-700(550-730)	1200	1260-1380
	mm	Start	(2,9-4,3)	4,3-5,0(4,0-5,3)
2.2 Supply pump	rev/min	200	1200	1400
	kp/cm <sup>2</sup>	1,4-1,9(1,2-2,1)	(5,1-6,0)	5,8-6,3(5,6-6,5)
Overflow delivery	rev/min	500		1400
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)
2.3 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1560-1650 (1540-1670)	0	
		1500 1400 1000 500	51,5-54,5 (30,0-40,0) (50,5-55,5) (51,0-53,0) 44,5-47,5 (43,5-48,5)	
Idle stop	Full	1400	0	
		400-480 (380-500)	0 (16,0-24,0)	
End stop	Start	300		
		100	mind.65,0	
End stop		150-250		

K15

K45

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 + 4^\circ</math> <math>\beta = 55 + 8^\circ</math> <math>\gamma = 30 - 8^\circ</math> <math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 3,5 mm Dimension V = 24,6 mm</p>

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 HAN 4,7 b 1

1. Edition

VA 6/100 H 1700 CR 75 - 1.  
0 460 306 144

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes  
company  
engine

Hanomag  
D 162

Pre-stroke setting 0,3 mm  $\pm 0,02 (+0,04)$

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1200	4,3-5,1 mm		
1.2 Supply pump pressure	1200	5,3-5,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1200	52,5-53,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1800	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min	400-550(370-580)	1200	1550-1700
	mm	Start	(4,0-5,4)	7,0-7,7(6,7-8,0)
2.2 Supply pump	rev/min	200	1200	1700
	kp/cm <sup>2</sup>	1,4-1,9(1,2-2,1)	(5,1-6,0)	7,0-7,5(6,8-7,7)
Overflow delivery	rev/min	500		1700
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1820-1920 (1800-1940)	0	
		1800	(25,0-35,0)	
		1650	49,0-52,0 (48,0-53,0)	
		1200	(52,0-54,0)	
		500	44,5-48,5 (43,5-49,5)	
	Stop	1700	0	
Idle stop	Full	400-480 (380-500)	0	
		300	(11,0-19,0)	
	Start	100	mind.65,0	
End stop		150-250		

Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 3,5 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 OPE 2,0a

2. Edition

VA 4/90 H 2200 CL 163-3  
CL 163-3 P  
0 460 394 036

supersedes 9,77  
company Opel  
engine 2,0 Vauxhall

Pre-stroke setting 0,15 mm  $\pm 0,02 (\pm 0,04)$

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	2000	6,4-6,8 mm		
1.2 Supply pump pressure	2000	7,0-7,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	2100	31,0-32,0 cm <sup>3</sup> /1000 strokes		2,0
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	5,0-11,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind. 50,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	2420	9,0-15,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	-- 1000 Start 1,2-2,2(0,9-2,5)(6,1-7,1)	2000	2100-2250 7,3-7,7(7,0-8,0)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200 1,3-1,8(1,1-2,0)	2000 (6,8-7,7)	2200 7,6-8,1(7,4-8,3)
Overflow delivery	rev/min cm <sup>3</sup> /10s	500 55-100(40-110)		2200 55-100(40- $\mu$ 0)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	2650-1800 (2630-2820)	0	
		2550 2420 2100 1250 600	max. 6,0 (8,0-16,0) (30,5-32,5) (33,5-38,5) (26,0-31,0)	
	Stop	1100	0	
Idle stop	Full	370-450 (350-470)	0 (4,0-12,0)	
	Start	350 100		
End stop			mind. 50,0	

Testoil-ISO 4113

K19

KAY

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension <math>iV = 3,6</math> mm</p> <p>Dimension <math>V = 29,45</math> mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 STE 5,0 b

4. Edition

VA 6/100 H 1150 CR 160-5  
0 460 306 243

supersedes 4.80  
company Steyr  
engine WD 611.85

Pre-stroke setting 0,2 mm  $\pm 0,02$  ( $\pm 0,04$ )

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	6,6-7,4 mm		
1.2 Supply pump pressure	1000	6,2-6,7 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	69,0-70,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	9,0-15,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind. 90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1350	16,0-24,0 cm <sup>3</sup> /1000 strokes		3,0

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	-- Start 600 200 2,0-2,5(1,8-2,7)	600 2,5-3,5(2,2-3,8) 1000 (6,3-7,7)	1000 (6,0-6,9)	1150 7,7-8,4(7,4-8,7) 1150 6,7-7,2(6,5-7,4)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	500 55-100(40-110)			1150 55-100(40-110)
Overflow delivery	rev/min cm <sup>3</sup> /10 s				

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1380-1430 (1360-1450) 1350 1150 1000 500	0 (15,0-25,0) (68,5-70,5) (65,8-70,2) (59,5-65,5)	
	Stop	1150	0	
Idle stop	Full	460-520 (440-540) 350	0 (8,0-16,0)	
	Start	100	mind. 90,0	
End stop		260-340		

Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 50 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension <math>\overline{IV}</math> 3,20 mm</p> <p>Dimension <math>\overline{V}</math> 24,65 mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

En

46

WPP 001/4 PEN 0,6a

2. Edition

VA 2/100 H 1200 CL 162  
0 460 302 006

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes 7.73  
company Volvo  
engine X2

Pre-stroke setting 0,3 mm  $\pm 0,02 (\pm 0,04)$

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	3,5-4,3 mm		
1.2 Supply pump pressure	1000	4,9-5,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	27,5-28,5 cm <sup>3</sup> /1000 strokes		2,0
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	250	7,0-13,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind. 85,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1250	9,0-17,0 cm <sup>3</sup> /1000 strokes		3,0

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min mm	400-510(370-540)	1000	1100-1250
		Start	(3,2-4,6)	4,3-5,0(4,0-5,3)
		200	1000	1200
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	1,2-1,7(1,0-1,9)	(4,7-5,6)	5,6-6,1(5,4-6,3)
		500		1200
Overflow delivery	rev/min cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1270-1320 (1250-1340)	0 1250 1150 1000 500	(8,0-18,0) 26,5-28,5 (25,5-29,5) (27,0-29,0) 18,0-21,0 (17,0-22,0)
	Stop	1200	0	
Idle stop	Full	270-320 (250-340)	0 (6,0-14,0)	
	Start	250		
End stop		100	mind. 85,0	
		150-250		

Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 20 \pm 4^\circ</math></p> <p><math>\beta = 25 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension <math>\text{I} \leq 4,5 \text{ mm}</math></p> <p>Dimension <math>\text{V} \leq 24,6 \text{ mm}</math></p>

• Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 PEN 0,6 b

2. Edition

En

VA 2/100 H 1300 CL 162-1  
0 460 302 008

supersedes 3.77  
company PENTA  
engine MO 7A

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm  $\pm$  0,02 ( $\pm$  0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	3,5-4,3 mm		
1.2 Supply pump pressure	1000	4,9-5,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	31,5-32,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	250	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.85,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1350	9,0-17,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	400-510(570-540) Start	700.	1000	1100-1250
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200 1,2-1,7(1,0-2,9)	1,2-2,2(0,9-2,5) (3,2-4,5)	4,3-5,0(4,0-5,3)	1000 1300
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 55-100(40-110)	(4,7-5,6) 6,0-6,5(5,8-6,7)	1300	55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1370-1420 (1350-1440) 1350 1310-1330 1280 1000 500	0 (8,0-18,0) Start 28,5-30,5 (27,5-31,5) (31,0-33,0) 21,5-24,5 (20,5-25,5)	
	Stop	1300	0	
Idle stop	Full	270-320 (250-340) 250 100 150-250	0 (6,0-14,0)	
End stop	Start		mind.85,0	

Testoil-ISO 4113

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L1

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 30 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension <math>\bar{V}</math> 4,5 mm</p> <p>Dimension <math>\bar{V}</math> 24,65 mm</p>

Testoil-ISO 4113

En

L2

L2

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 OPE 2,1 a 1

1. Edition

VA 4/90 H 2200 CL 163-1  
0 460 394 016

En

supersedes  
company:

Opel  
TL 1755 Vauxhall  
engine.

Pre-stroke setting  $0,15 \text{ mm} \pm 0,02 (\pm 0,04)$

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 101/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	2000	6,4-6,8 mm		
1.2 Supply pump pressure	2000	7,0-7,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1250	37,5-38,5 cm <sup>3</sup> /1000 strokes		2,0
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	5,0-11,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.50,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	2420	9,0-15,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min	--	1000	2000 2100-2250
	mm	Start	1,2-2,2(0,9-2,5)	(6,1-7,1) 7,0-7,7(6,7-8,0)
2.2 Supply pump	rev/min	200		2000 2200
	kp/cm <sup>2</sup>	1,3-1,8(1,1-2,0)		(6,8-7,7) 7,6-8,1(7,4-8,3)
Overflow delivery	rev/min	500		2200
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	2650-2800 (2630-2820)	0	
		2550	max. 6,0	
		2420	(8,0-16,0)	
		2230	32,0-34,5 (31,0-35,5)	
		2200	32,25-34,75 (31,25-35,75)	
		1250	(37,0-39,0)	
		600	29,5-32,5 (28,5-33,5)	
	Stop	1100	0	
Idle stop	Full	370-450 (350-470)	0	
		350	(4,0-12,0)	
	Start	100	mind.50,0	
End stop		110-190		

Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 28 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension <math>\bar{IV}</math> 3,6 mm</p> <p>Dimension <math>\bar{V}</math> 29,45 mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 OPE 2,1a

6. Edition

En

VA 4/90 H 2200 CL 163  
CL 163 P  
0 460 394 009

supersedes 9.76  
company: Opel  
engine:

Pre-stroke setting 0,15 mm  $\pm 0,02 (\pm 0,04)$

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	2000	6,4-6,8 mm		
1.2 Supply pump pressure	2000	7,0-7,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1250	37,5-38,5 cm <sup>3</sup> /1000 strokes		2,0
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	5,0-11,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.50,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	2420	9,0-15,0 cm <sup>3</sup> /1000 strokes		3,0

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min mm	--	1000 Start 1,2-2,2(0,9-2,5) (6,1-7,1) 200	2000 7,0-7,7(6,7-8,0) 2200
2.2 Supply pump	rev/min kp/cm <sup>2</sup>		1,3-1,8(1,1-2,0)	(6,8-7,7) 7,6-8,1(7,4-8,3) 500 2200
Overflow delivery	rev/min cm <sup>3</sup> /10 s		55-100(40-110)	55-100(40-110)

2.3 Fuel deliveries	Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full		2650-2800 (2630-2820) 2550 2420 2230 2200 1250 600	0 max.6,0 (8,0-16,0) 32,0-34,5 (31,0-35,5) 32,25-34,75 (31,25-35,75) (37,0-39,0) 29,5-32,5 (28,5-33,5)	
	Stop		2200	0	
Idle stop	Full		370-450 (350-470) 350 100	0 (4,0-12,0)	
End stop	Start		110-190	mind.50,0	

Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 28 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension <math>\bar{V}</math> 3,60 mm</p> <p>Dimension <math>V</math> 29,45 mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

En

WPP 001/4 OPE 2,1b  
2. Edition

VA 4/90 H 2200 CL 163-2  
CL 163-2 P  
0 460 394 026

supersedes 1.75  
company Opel  
engine 2,0 ltr.

Pre-stroke setting 0,15 mm  $\pm 0,02 (\pm 0,04)$

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	2000	6,4-6,8 mm		
1.2 Supply pump pressure	2000	7,0-7,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	2100	31,0-32,0 cm <sup>3</sup> /1000 strokes		2,0
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	5,0-11,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	2420	9,0-15,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	-- 1000	2000	2100-2250
	mm	Start 1,2-2,2(0,9-2,5)	(6,1-7,1)	7,3-7,7(7,0-8,0)
2.2 Supply pump	rev/min	200	2000	2200
	kp/cm <sup>2</sup>	1,3-1,8(1,1-2,0)	(6,8-7,7)	7,6-8,1(7,4-8,3)
Overflow delivery	rev/min	500		2200
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	2650-2800 (2630-2820)	0 max. 6,0 (8,0-16,0)	
		2550 2420 2100 1250 600	(30,5-32,5) 34,5-37,5 (33,5-38,5) 27,0-30,0 (26,0-31,0)	
	Stop	2200	0	
Idle stop	Full	370-450 (350-470)	0 (4,0-12,0)	
		350 100		
End stop	Start	110-190	mind. 50,0	

Testoil-ISO 4113

L7

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 28 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension <math>\text{A} = 3,69 \text{ mm}</math></p> <p>Dimension <math>\text{V} = 29,45 \text{ mm}</math></p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 STE 6,0g 5

1. Edition

En

VA 6/100 H 1200 CR 178  
0 460 306 188

supersedes  
company:  
engine.

Steyr  
WD 610.41

Pre-stroke setting 0,3 mm  $\pm 0,02 (+ 0,04)$

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	3,0-3,8 mm		
1.2 Supply pump pressure	900	4,9-5,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1180	69,0-70,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	270	11,0-19,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1280	31,0-39,0 cm <sup>3</sup> /1000 strokes		

Testoil-ISO 4113

#### 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	Start 300-450(270-480) 0,7-1,7(0,4-2,0)	500	900	1050	1070-1210
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200 1,5-2,0(1,3-2,2)		900		1200
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 55-100(40-110)			(4,7-5,6)	6,0-6,5(5,8-6,7)
						1200 55-100(40-110)

#### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1300-1420 (1270-1450) 1280 1210-1240 1180 900 500 1200	0 (30,0-40,0) Start (68,5-70,5) 65,0-68,0 (64,0-69,0) 63,0-66,0 (62,0-67,0) 0	
Idle stop	Full	350-430 (330-450) 270 100	0 (10,0-20,0)	
End stop	Start	mind.90,0 120-220	mind.90,0	

L9

L9

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension <math>\text{IV} = 3,0 \text{ mm}</math></p> <p>Dimension <math>\text{V} = 24,6 \text{ mm}</math></p>

Testoil-ISO 4113

En

L10

L10

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

En

46

WPP 001/4 PEU 2,1e 1

1. Edition

VA 4/90 H 2100 CR 170-1  
0 460 394 020

supersedes  
company  
engine:

Peugeot  
XDD 4/90 für  
Saviem SG 1

Pre-stroke setting 0 mm  $\pm 0,02 (\pm 0,04)$

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	2000	5,8-6,2 mm		
1.2 Supply pump pressure	2000	5,6-6,1 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1400	37,5-38,5 cm <sup>3</sup> /1000 strokes		1,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	330	10,0-14,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.70,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	2200	17,0-23,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets			
2.1 Timing device	rev/min mm	Start	1000	1600	2000 2200-2400
		0,7-1,7(0,4-2,0)	3,7-4,5(3,4-4,8)	5(5,5-6,5)	6,9-7,6(6,6-7,9)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200		2000	2100
		1,0-1,5(0,8-1,7)		(5,4-6,3)	--
Overflow delivery	rev/min cm <sup>3</sup> /10s	500			2100
		55-100(40-110)			55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	2300 2200 1050 1400 850 500	max.9,0 (16,0-24,0) 33,75-36,25 (32,75-37,25) (37,0-39,0) 30,25-32,75 (29,25-33,75) 30,25-32,75 (29,25-33,75)	
	Stop	2100	0	
Idle stop	Full	400-460 (380-480) 330 100	0 (9,0-15,0)	
End stop	Start	150-250	mind.70,0	

Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 30 \pm 4^\circ</math></p> <p><math>\beta = \pm 8^\circ</math></p> <p><math>\gamma = 18 + 2^\circ</math></p> <p><math>\delta = - 6^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension <math>\text{W}</math> 2,0 mm</p> <p>Dimension <math>\text{Y}</math> 25,0 mm</p>

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 CIT 2,1 b

4. Edition

En

VA 4/90 H 2250 CR 171-1  
0 460 394 018

3.77  
supersedes Citroen  
company CRD 90  
engine.

Pre-stroke setting 0 mm  $\pm 0,02 (+ 0,04)$

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings		rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel		1400	4,8-5,2 mm		
1.2 Supply pump pressure		1400	4,5-5,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure		2250	32,5-33,5 cm <sup>3</sup> /1000 strokes		1,5
Full-load delivery with charge-air pressure		--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation		300	9,0-15,0 cm <sup>3</sup> /1000 strokes		
1.5 Start		100	mind.58,0 cm <sup>3</sup> /1000 strokes		2,0
1.6 Full-load speed regulation		2400	15,0-21,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	Start -- 600 1400 1800 1950-2100 0,4-1,6(0,2-1,9)(4,5-5,5)7,1-8,1(6,8-8,4)8,9-9,6(8,6-9,9)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200 1400 2250 1,0-1,5(0,8-1,7) (4,3-5,2) 7,1-7,6(6,9-7,8)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 55-100(40-110) 2250 55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	2400 2250 1250 600	0 (14,0-22,0) (32,0-34,0) 34,5-36,5 (33,5-37,5) 29,0-32,0 (28,0-33,0)	
	Stop	2250	0	
Idle stop	Full	310-380 (290-400) 300 100	0 (8,0-16,0)	
End stop	Start	150-250	mind.58,0	

Testoil-ISO 4113

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L13

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 12 \pm 4^\circ</math></p> <p><math>\delta = 50 \pm 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension <math>\bar{V}</math> 1,6 mm</p> <p>Dimension <math>\bar{V}</math> 24,6 mm</p>

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 STE 2,4a  
2. Edition

VA 3/90 H 1200 CR 172  
0 460 393 007

En

supersedes 7.73  
company Steyr  
engine WD 308.40

Pre-stroke setting 0,3 mm  $\pm 0,02$  ( $\pm 0,04$ )

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	1,5-2,3 mm		
1.2 Supply pump pressure	800	4,5-5,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1150	52,0-53,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,5-15,5 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 70,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	400-550(370-580)	600	800	920-1170
	Start	0,4-1,4(0,1-1,9)	(1,2-2,6)	2,4-3,1	(2,1-3,4)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200		800	1200
		1,6-2,1(1,4-2,3)		(4,7-5,2)	5,9-6,4(5,7-6,6)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500			1200
		55-100(40-110)		55-100(40-110)	

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1360-1420 (1340-1440) 1300 1240-1270 1150 900 500	0 (25,0-35,0) Start (51,5-53,5) 55,0-57,0 (54,0-58,0) 59,0-62,0 (58,0-63,0)	
	Stop	1200	0	
Idle stop	Full	400-450 (380-470) 300	0 (8,5-16,5)	
	Start	100	mind. 70,0	
End stop		130-230		

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump = 4,0 mm</p> <p>Dimension IV = 24,6 mm</p>

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 FIA 2,6d

1. Edition

En

VA 4/110 H 1600 CL 72  
0 460 314 020

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes  
company: Fiat  
engine: 8040

Pre-stroke setting 0,5 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1200	6,5-7,3 mm		
1.2 Supply pump pressure	1200	6,0-6,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	59,0-60,0 cm <sup>3</sup> /1000 strokes		
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	12,0-18,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.130,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1700	38,0-46,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	400-500(370-530)	1200	1420-1550
	Start	(6,2-7,6)		8,9-9,6(8,6-9,9)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200	1200	1600
	1,8-2,3(1,6-2,5)	(5,8-6,7)		7,3-7,8(7,1-8,0)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500		1600
	55-100(40-110)			55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1780-1850 (1760-1870) 1700 1600 1000 500	0 (37,0-47,0) 54,0-56,0 (53,0-57,0) (58,5-60,5) 52,0-55,0 (51,0-56,0)	
	Stop	1600	0	
Idle stop	Full	320-380 (300-400) 300	0 (11,0-19,0)	
	Start	100		
End stop		200-300	mind.130,0	

Testoil-ISO 4113

L19

L19

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 50 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV= - mm</p> <p>Dimension V</p>

Testoil-ISO 4113

En

L20

L20

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 HAN 2,3ze

2. Edition

En

VA 3/100 H 1400 CR 73  
0 460 303 112

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes 5.72  
company Hanomag  
engine D 132 H

Pre-stroke setting 0,3 mm  $\pm 0,02 (\pm 0,04)$

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1200	3,2-4,0 mm		
1.2 Supply pump pressure	1200	5,0-5,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	54,0-55,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.75,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1480	31,0-39,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	600-750(570-780)	1200	1280-1420
		Start	(2,9-4,3)	4,3-5,0(4,0-5,3)
		200	1200	1400
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	1,3-1,8(1,1-2,0)	(4,8-5,7)	5,8-6,3(5,6-6,5)
		500		1400
Overflow delivery	rev/min cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1510-1570 (1490-1590)	0	
		1480	(30,0-40,0)	
		1380	56,5-59,5 (55,5-60,5)	
		1000	(53,5-55,5)	
		500	49,5-52,5 (48,5-53,5)	
	Stop	1400	0	
Idle stop	Full	380-450 (380-470)	0	
		300	(11,0-19,0)	
		100	mind.75,0	
End stop	Start	150-250		

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L21

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L21

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p><math>\alpha = 3,5 \text{ mm}</math></p> <p>Dimension IV</p> <p>Dimension V <math>= 24,6 \text{ mm}</math></p>

Testoil-ISO 4113